MAY 1954

American Engineer

IN THIS ISSUE . . .

● **HAVE WE LOST CONTROL OF OUR PROFESSION?**

By

Major General Samuel D. Sturgis, Jr.,
Chief, Corps of Engineers, U. S. Army

Storm Signals are Raised by the Chief of the Army's Corps of Engineers.

. . . *Also*

Should Corporations Practice Engineering? —A Debate—

●

Nuclear Engineering: the Newest Branch By L. E. Johnston, P.E.

●

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—AE—

REVOLVING DOOR FACTS — The 1954 Revolving Door catalog of the International Steel Co. is ready for distribution. The catalog furnishes not only listings and illustrations of International's products but also gives information valuable to engineers, architects and building management executives in determining revolving door requirements for a specific building. Write: International Steel Co., Evansville, Ind.

—AE—

RUST-OLEUM—Just released by the Rust-Oleum Corporation, manufacturer of rust preventives for more than 25 years, its 1954 catalog provides a treatise on rust prevention. The enlarged publication shows 94 color chips of Rust-Oleum products and includes instructions for surface preparation and application of all its primers, finishers, sealers, and coatings. Also included are descriptions of the new restful color group of finishes developed to provide new color harmonies for plant interiors and machinery surfaces as well as other new products. Send for your free copy of the 1954 Rust-Oleum General Catalog, Form No. 253, to the Rust-Oleum Corp., 2799 Oakton St., Evanston, Ill.

Keep abreast of technical developments by requesting New Literature.

COMMERCIAL WEED KILLER — A brochure, pictorially showing the commercial uses of "Telvar" W weed killer in industry and the results that may be obtained, has been prepared by Du Pont. The brochure shows interesting "before" and "after" shots of industrial sites where the weed and grass killer was used. Write: Du Pont, Public Relations Dept., Wilmington, Del.

—AE—

METAL BOOKLET—The Allegheny Ludlum Steel Corporation has just printed the 2nd edition of its booklet, "Allegheny Metal in Chemical Processing." It is a revised 34-page booklet covering the use of stainless steel in the manufacture of acids and other chemicals, in the general process industries, in the plastics industry, in pharmaceutical manufacture, in dye making and in soap making. Also included are corrosion resistance data, fabricating information and a stainless steel finder. Write: The Advertising Dept., Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 19, Pa.

—AE—

HEATING-COOLING—Their new all-electric heat pump is described in a 4-page bulletin published by the Westinghouse Electric Corp. The heat pump is a self-contained system that without water or flame, provides warm filtered air in the winter and cool, dehumidified air in the summer. A complete explanation of the heating and cooling cycles of the unit is presented in the bulletin including schematic flow diagrams of the refrigerant and air. For a copy of this bulletin write: Westinghouse Air Conditioning Division, Dept. T-557, 200 Readville St., Hyde Park, Boston 36, Mass.

ALCOA INFORMATION ON WALL FACINGS

Exceptional file folders by the Aluminum Company of America offer detailed drawings and photographs showing architectural use of aluminum as an exterior wall facing material. The drawings illustrate achievements in recent prize-winning construction with aluminum and were obtained directly from the originating architects, and subcontractors who fabricated the metal sections. The shop or erection drawings show how the various types of aluminum panels are installed and how these specifications can be adapted for any commercial building.

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The first four files may be obtained from: Aluminum Company of America, 501 Alcoa Building, Pittsburgh 19, Pa. Alcoa expects to release a new detail sheet with specifications each month.

SILENT CHAIN BOOK—A new 88-page Silent Chain Book, No. 2425 lists the versatility of silent chain which makes it suitable for a broad range of applications from tiny fractional horsepower drives in small power tools to huge drives transmitting thousands of horsepower as found in steel mills. The book includes an indexed table of service factors, rating tables, chain length and center distance computations and other data. Write: Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

—AE—

REPAIR MANUAL — A 32-page manual that tells how to splice and repair conveyor and elevator belting has just been published by The B. F. Goodrich Co. A series of 42 photographs are used to illustrate, step-by-step fashion, proper belt-splicing procedure. The manual describes splicing materials, tools needed, the best conditions for splicing and repair, method of splicing cord and fabric belts and special procedure in splicing rayon belt. Detailed instructions in on-the-job vulcanizing of splices by means of portable vulcanizers are also included. One section covers major and minor repairs to conveyor and elevator belts, tells how to replace plies in the belt carcass and how to vulcanize the repair. Copies may be obtained without charge upon request received on company letterhead.

—AE—

PORTABLE AGGREGATES PLANT—A new 24-page booklet by Pioneer Engineering Works tells how a portable plant can be used to produce aggregates meeting exact gradation requirements. Through use of a series of three-color cutaways and two-color diagrams, accompanied by "how, what and why" text materials, the booklet gives an understanding of the patented operating principle on which this aggregates plant is built. Write for your free copy of Booklet No. 650, Pioneer Engineering Works, Inc., Minneapolis 13, Minn.

. . . and say you saw it in the AMERICAN ENGINEER

Letters

Marriage and Money . . .

Dear Editor:

While reviewing your article entitled "How to Attract and Hold Engineering Talent" in the February issue of the *American Engineer,* I was most shocked by the statement that it is apparently true that the majority of engineers dissatisfied with their present salaries are men who have acquired a wife and family.

It certainly would appear obvious to me that these gentlemen would be the most entitled to be dissatisfied in view of the additional responsibilities acquired by them through marriage and that a statement of this nature was certainly not relevant. I certainly would assume that your article is not trying to state that we engineers should not get married inasmuch as we then possibly would become more dissatisfied with our salaries.

I personally remember receiving the antithesis of this article when I was told by the personnel officer of a prominent consulting engineers' firm, when I was still single, that despite the fact that I was doing work comparable to other men in my group, I should work for less money inasmuch as I was not married.

I would like to conclude that since 45 per cent of the engineers who answered said they were dissatisfied with their present positions due to low salary . . . contrary to the "something for nothing" attitude, our entire concept of proper salary should be reviewed.

JEROME D. FRANKLIN, P.E.,
Grand Rapids, Mich.

Ex-President Speaks . . .

Dear Editor:

I read in the March issue of *The American Engineer,* on page 5, the letter from H. H. White, P.E., of Atlanta, Ga., concerning a letter from D. B. Steinman, P.E., of New York, N. Y., which appeared in the January 1954 issue of *The American Engineer.*

Mr. White asks two questions:

1. Has anyone taken credit away from anyone?
2. What constitutes "a self-laudatory manner"?

I met Dr. Steinman last week at a dinner given for Drs. Hausman and Fairman in connection with their services on the New York State Board of Examiners of Professional Engineers and Land Surveyors, and we discussed Mr. White's letter with its implications. Dr. Steinman and I have been associated in professional engineering matters for more than thirty years and were among the Founders of the National Society of Professional Engineers. Dr. Steinman was its first president and I was president in 1940. One of the objectives of the Society was to acquaint the public concerning the functions and activities of Professional Engineers and to further the recognition of the engineer in the work which he performed.

It was observed that in dedication ceremonies of Engineering Works credit was given to administrators of municipalities or government agencies, to contractors, to financial agencies, and scarcely any credit to the engineers. Architects have been far more successful in acquainting the public with the work which they perform.

Referring to Mr. White's question, "Has anyone taken credit away from anyone?" I would comment that if an engineer performs a creative work and does not receive any mention in connection with an article on the work, he is deprived of a "credit" which may reflect adversely upon the engineering profession as well as upon the individual.

As to Mr. White's question, "What constitutes a 'self-laudatory manner'?" I know this has been a much mooted question. Advertising in journals to the extent of names and specialties in engineering has been carried on for many years.

The writing of "articles" and "papers" by engineers concerning work which they have done or have been connected with has been an accepted practice for countless years.

For an engineer to publicly state or write how good he may be is not looked upon with favor and should not be done.

What Dr. Steinman asked be done is to acquaint the readers that the bridge was his job. I think that the December photograph of the Constitution Bridge at San Juan, Puerto Rico, might well have had included the engineer's name.

It has been an uphill struggle for many years to have the engineer assume his rightful place in the life of the community and it is astounding to find that even in this time, many men of business acumen do not know what a "Professional Engineer" really is.

JOHN CHARLES RIEDEL, P.E.,
Past President, National Society
of Professional Engineers,
New York, N. Y.

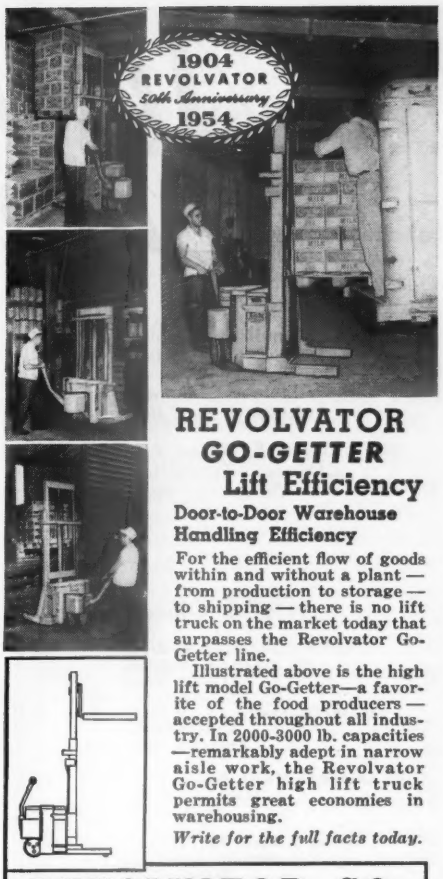
Engineering Education . . .

Dear Editor:

I have just read NSPE's survey, "How To Attract and Hold Engineering Talent." I am sorry to note that in this survey NSPE has joined the educationist in his attack on engineering education; and, in doing so has either ignored the data available in the survey and elsewhere, or has exhibited a lack of knowledge concerning them.

Chapter VII of the survey states that both engineers and top management believe engineering education to be too narrow. Data presented are to the effect that 28% of the employed engineers contacted so believed. This is a minority, yet the attitude is expressed as a group opinion in the summary, or Chapter VII. Actually, answers R 1, page 50 of the survey, reveal

(*Continued on page* 39)



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American Engineer

MAY, 1954

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—Oliver Wendell Holmes

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• SPECIAL ARTICLES

Have We Lost Control of Our Profession 9
By Major General Samuel D. Sturgis, Jr., Chief of the U. S. Army Corps of Engineers. This outstanding military leader and engineer names some present threats to the welfare of the profession.

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What General Electric people are saying . . .

F. E. CREVER
T. TROCKI

Mr. Crever is Manager—Engineering and Projects Department—Knolls Atomic Power Laboratory.

Mr. Trocki is Manager—Coolant Systems Sub-Section, Knolls Atomic Power Laboratory

". . . Ship propulsion appears to be the earliest practical application for a mobile atomic power plant and consideration of some fundamentals of a nuclear power plant will make the reasons apparent. As conceived today, a nuclear power plant differs from a conventional plant mainly in the method of heat production and heat transfer to a thermodynamic fluid, which is expanded in turbomachinery to produce power in the conventional way. In a plant using steam as the thermodynamic fluid, the nuclear reactor and steam generation equipment will replace the boiler and its accessories. Although the reactor core itself can be of relatively small dimensions, the shielding required around it increases the overall volume and weight of a reactor by a considerable factor. Furthermore, the reactor coolant and heat transfer fluid is made radioactive in passing through the reactor and all of the machinery through which it flows must be shielded. The shielding around the reactor core proper is called the primary shield, and the shield around the heat transfer equipment, the secondary shield. As the amount of shielding is practically independent of power output, a nuclear power plant of low power will be penalized excessively with respect to its power output. As the power output of a reactor-steam generation plant is increased, the equipment volume and shielding around it does not increase in direct proportion to the power; hence, a more favorable relationship is reached between power output and plant space and weight. Power plants for propulsion of larger power ocean-going vessels (of the order of 10,000 HP and above) are of sufficiently large power output to fall within the favorable range for a nuclear power plant of current design.

at the AIEE, New York

A. W. EADE
J. J. FRAIZER

Mr. Eade and Mr. Fraizer are with the Meter and Instrument Department

At the high speeds military planes fly today, the pilot simply doesn't have time to read indicators and coordinate information presented to him. To offset this situation, many new flight-control systems are presently undergoing development.

A good example of what is taking place is the automatic jet-engine control system developed by GE for the North American F86D Sabrejet. Here seven separate measurements are integrated, allowing the pilot to increase or decrease his thrust by simply moving a throttle; there's no danger of his overspeeding or overheating the engine.

Many proposals have been made to consolidate instruments so that one indicator would serve where formerly three or four were needed. Again, for example, an engine-performance indicator has already been proposed that will replace four separate indicators. This single indicator will at a glance show engine speed and temperature and oil and fuel pressure. The fuel and oil pressure portions of this gage would merely be OFF-ON devices, with a green flag indicating safe, and a red flag unsafe, pressure ranges. On the surface this appears to be a particularly good feature, for airmen often only glance at an accurately marked gage to check the pointer's relative position.

The progress made in the first 50 years of flight has been nothing short of astonishing. And there's reason to expect that it will continue to be even more so in the future. So far as instrumentation is concerned, you can look for a greater consolidation of instruments as the speed of flight moves upward and more use of flight-control systems in place of individual instruments and controls.

G.E. Review

G. R. FUGAL

Mr. Fugal is Manager—Employment Practices—Employee and Plant Community Relations Services

Group-administered safety education, as generally utilized by industry, is relatively ineffective. It does not really accomplish what management thinks it accomplishes. A general redirection of effort toward a continuing, individualized, personalized instruction is needed. The effectiveness of this type of training has been demonstrated.

The problem of training the employee to work safely is not so much the act, for example, of teaching him to put on his gloves. It is more than that. There is the additional factor of establishing in the employee's daily conduct the habit of wearing his gloves. Further, management must recognize that the factors of skill and understanding can be trained into the employee only with diligence and patience. Such learning takes a long time, and management must discard its ideas that these factors that enter so definitely into the safety-training activity can be acquired by the employee through the "shot in the arm" variety of industrial education.

During recent years increasing numbers of educators have campaigned for individualized instruction in the schoolroom, pointing to the superior results obtained over other methods. This experimentation provides an industrial education counterpart to the claims advanced by the formal educators in that the great individual differences in the attitudes, abilities, and habits of workers are recognized.

at the Lowell, Mass. Industrial Safety Council

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Professional News in Capsule Form

New York Engineers Join FOA Team • Dr. Gustav Egloff to Receive German Medal • Missouri Honor Award Presented to Rex M. Whitton • Industrial Defense Conference Planned • Other Items of Interest

Two prominent New York consulting engineers, members of the New York State SPE—Franklin J. Leerburger and William Ginsberg, the latter of William Ginsberg Associates—have been retained as members of a team of engineering specialists recently set up by the Foreign Operations Administration. The job assigned to the seven-man group will be that of making on-the-spot evaluations of the accomplishments of certain major industrial projects in Western Europe and Africa which have been developed with some U.S. financial assistance.

In announcing the formation of the evaluation team, Director of Foreign Operations Harold E. Stassen stated that the purpose of the studies will be to determine the success of the U.S.-aided projects in accomplishing the objectives for which they were planned.

Maurice R. Scharff, an engineer with long experience in the public utility field and a consultant for public and private power enterprises, will head the group; and Mr. Leerburger will be associated with him in the team's management.

Other members will be: Leighton F. Korb, Freyn Engineering Company, Pittsburgh; Max H. Forester, vice president, Pittsburgh Consolidation Coal Company; Burnside R. Value, partner in Seelye, Stevenson, Value and Knecht of New York; and Cornelius S. Snodgrass, petroleum consultant of Washington, D. C.

* * *

Dr. Gustav Egloff, distinguished member of the Illinois SPE and NSPE, has been selected to receive the 1954 Carl-Engler-Medaille, Germany's highest award in the field of mineral oil science.

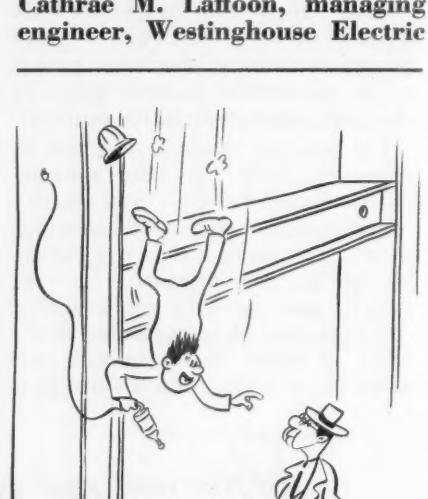
Dr. Egloff, who is director of research for Universal Oil Products Company, Des Plaines, Ill., is the first scientist living outside Germany to receive the award, according to the announcement made by Professor G. Schlicht, president of the German Institute of Petroleum and Coal.

The medal will be presented to him in October during the Institute's annual congress which will be held in Essen, West Germany.

* * *

Rex M. Whitton of Jefferson City, Mo., chief enginer of the Missouri Highway Department and a member of the Missouri SPE, was one of five engineers who received bronze medals for outstanding achievement at a special University of Missouri convocation climaxing the school's Engineers' Week celebration. Mr. Whitton, a graduate of the University, was cited for "his thirty-four year career with the Missouri Highway Department, beginning at the bottom of the engineering ladder and working his way by merited promotions until finally achieving and notably fulfilling the highest responsibility as chief engineer."

Other engineers who received Missouri Honor Awards at the convocation were: Leonard J. Fletcher, vice president, Caterpillar Tractor Co., Peoria, Ill.; Cathrae M. Laffoon, managing engineer, Westinghouse Electric Corporation, East Pittsburgh, Pa.; Sterling P. Reynolds of Caruthersville, Mo., chief engineer, St. Francis Levee District, and a member of the board of supervisors, Little River Drainage District; and Dr. Webster N. Jones, vice president in charge of industrial and government relations, Carnegie Institute of Technology, Pittsburgh, Pa.



Ah, our safety engineer, just the man I want to see.

* * *

Preliminary plans for a Businessmen's Conference on Industrial Defense in the Atomic Age have been announced by Richard L. Bowditch, president of the Chamber of Commerce of the United States.

The meeting has been scheduled for June 15 in Washington, D. C., and invitations to attend are being extended to the top executives of more than 300 key industrial facilities located in the 50 metropolitan areas where 71 per cent of the nation's productive capacity is concentrated.

* * *

H. E. Chiles, president of the Western Company of Midland, Tex., and a member of the Texas SPE, has been elected president of the Young Presidents Organization. He will succeed Lee A. Potter, Jr. of Foreman, Ford & Co. of Minneapolis as leader of the young executives' group on July 1.

* * *

Dr. Lillian M. Gilbreth, world-renowned industrial consultant, became the first woman to receive the Washington Award for leadership in engineering when the honor was presented to her by the Western Society of Engineers at a Chicago meeting on April 7th. The Washington Award Commission credits Dr. Gilbreth and her late husband, Dr. Frank B. Gilbreth, with having set the trend in industry and architecture toward labor saving techniques and design.

Previous recipients of the award have included such prominent persons as Herbert Hoover and Charles F. Kettering, both of whom have also received the NSPE Award, Arthur H. and Karl T. Compton, Henry T. Heald, Orville Wright, and Henry Ford.

Former NSPE Vice President William F. Ryan of Newton, Mass., has received the 1954 New England Award of the Engineering Societies of New England in recognition of his professional achievements. Mr. Ryan, who is engineering manager of the Stone & Webster Engineering Corporation of Boston, was presented with the award on April 27 during the ESNE's annual meeting in Boston.

* * *

Miss Edith Clarke, professor of electrical engineering at the University of Texas in Austin, was presented with the 1954 award of the Society of Women Engineers during the organization's recent annual meeting in Washington, D. C.

The presentation was made by Miss Evelyn Jetter, chairman of the Awards Committee, who explained that Miss Clarke had been selected because of her many original contributions to stability theory and circuit analysis.

For many years, Miss Clarke was a member of the Central Station Engineering Department of the General Electric Company in Schenectady, N. Y. A graduate of Vassar, she received her electrical engineering degree from the Massachusetts Institute of Technology; and she was the first woman to be elected a fellow of the American Institute of Electrical Engineers.

* * *

The summer and Pacific general meeting of the American Institute of Electrical Engineers has been scheduled for the Hotel Biltmore, Los Angeles, Cal., June 21-25, according to an announcement from Bradley Cozzens, general chairman.

One of the features of the meeting will be the presentation of the Lamme Gold Medal to Frank A. Cowan, assistant director of operations, Long Lines Department, American Telephone and Telegraph Company. Mr. Cowan was selected for the honor in recognition of his contributions to long-distance communication and to the development of modulating and transmission measuring apparatus.

* * *

Donald McGregor Stephens, M.E.I.C., of Winnipeg, Manitoba, will take office as the new president of The Engineering Institute of Canada during the organization's annual meeting to be held at Quebec City, May 12-14. Mr. Stephens, who will succeed Ross L. Dobbin of Peterborough, Ontario, in the presidency of the Institute, is chairman and general manager of The Manitoba Hydro-Electric Board and president and general manager of the Winnipeg Electric Company.

* * *

Professor Ralph B. Wiley, distinguished member of the Purdue University faculty for 46 years, head of the School of Civil Engineering and Engineering Mechanics since 1937, and director of the Joint Highway Research Project since 1939, will retire June 30. He will be succeeded by Professor Kenneth B. Woods, professor of highway engineering and associate director of the Joint Highway Research Project, a cooperative research program administered by the university in cooperation with the Indiana Highway Department.

Harold L. Michael, research assistant on the highway project and instructor in highway engineering, will be promoted to the assistant directorship succeeding Professor Woods. Announcement of the changes came from Purdue's president, Frederick L. Hovde.

(Please turn the page)

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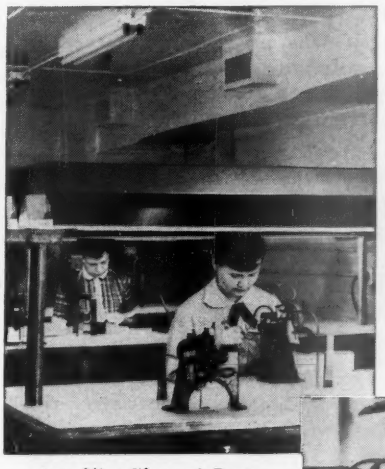

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A new society, The Institute of Management Sciences, has recently been established as an outgrowth of the widely-felt need for developing new and more effective means to solve the increasingly complex problems of modern management. A primary goal of the Institute, it was announced, will be to help make new research available for solving practical business problems.

William W. Cooper, professor of economics and industrial administration at the Carnegie Institute of Technology, is the president of the new society. The Institute plans to publish a journal to be called "Management Science."

* * *

H. M. Taylor, Jr., a charter member of the Travis Chapter, Texas SPE, has been appointed to serve as a consulting member in the Association of American Railroads. Mr. Taylor is an engineer with the Texas Highway Department Bridge Division.

* * *

The Institute of Radio Engineers has announced that it will sponsor a symposium on "Global Communications" in Washington, D. C., at the Statler Hotel, June 23-25.

* * *

Admiral Paul F. Lee, USN (ret.), vice president of Gibbs & Cox, Inc., Naval Architects and Marine Engineers, has been named to receive the 1954 Edward P. Connell Award of the American Gear Manufacturers Association. The award, in the form of a silver medallion and scroll, will be presented during the association's annual meeting at Hot Springs, Va., June 8.

Seeger Announces Intensified Public Relations Program at Local Levels

J. W. Buchta of the University of Minnesota has been appointed executive secretary of the National Science Foundation's Advisory Committee on Government-University Relationships, according to an announcement by NSF Director Alan T. Waterman. Professor Buchta, who holds a B.S. in electrical engineering from the University of Nebraska and a Ph.D. in physics from Minnesota, will take leave from his post as associate dean of the University's College of Science, Literature, and the Arts, while working with the NSF committee.

* * *

"What's New in Industrial Engineering" is the theme selected for the fifth annual conference and convention of the American Institute of Industrial Engineers, which is scheduled to be held in Louisville, Kentucky, May 5-8. The conference will also feature a number of industrial exhibits pertaining to application engineering, control techniques, automation and operations research, and other subjects.

* * *

Dr. Ralph J. Slutz, well-known design and communications engineer and physicist, has been appointed assistant chief of the Central Radio Propagation Laboratory of the National Bureau of Standards.

* * *

Brigadier General E. C. Itschner, a West Point graduate and veteran of 29 years in the Corps of Engineers, has become assistant chief of engineers for civil works. In that position, which he assumed in March, General Itschner has responsibility for supervising the nation-wide civil works program of the Corps of Engineers.

The announcement of a year-round, intensified NSPE public relations program on the state and local levels has been made by Edwin W. Seeger, Society vice-president and national public relations committee chairman.

Seeger 'kicked off' the program in a special letter now being sent to all state and chapter presidents.

The letter is being sent along with the regular NSPE Public Relations Newsletter and outlines a four-point program to bring the story of the professional engineer to every community.

"The great success that some chapters have had in publicizing the engineer as a professional man has encouraged the NSPE Public Relations Committee to undertake a project for sharing these successful techniques with the entire Society," Seeger stated.

A key point in the expanded program is the establishment of a mailing list containing the names of all state and chapter public relations chairmen.

Seeger's letter urges all state and chapter presidents to send the names and addresses of these chairmen to NSPE headquarters in Washington.

"This mailing list will be used to furnish these chairmen with the best possible professional public relations guidance on a year-round basis," Seeger explained.

"They will be given detailed instructions on how to get the accomplishments of their local NSPE group before the public," he added.

A special form has been printed on the Public Relations Newsletter for state and chapter presidents to write the name and address of their group's public relations chairman.

These forms are to be mailed to NSPE headquarters, Washington, D.C.

The other three points in the in

(*Continued on page 39*)

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Civil works or military operation, the Corps of Engineers is ready to serve. Below: Opening the gates of the Monongahela River Locks. (See another photo, next page). Right: A floating bridge goes across the Han River in Korea.

What About the Quality of Today's Engineering Work? Is "Progressive" Education Hurting Our Profession? Do You, as an Engineer, Really Stand Behind the Corps of Engineers, Remembering That It's *Your* Army and *Your* Country? What About Public Works? These Are Some of the Questions the Top Man of the Army's Corps of Engineers Asks in This Hard-Hitting Article.

Have We Lost Control Of Our Profession?

By

MAJOR GENERAL SAMUEL D. STURGIS, JR.,
Chief, Corps of Engineers, U. S. Army

IN our military services few words are mentioned as often as "leadership." From plebe days in the academies, the officer is constantly reminded that leadership is one quality that one must not lack. Today, more than ever before. this thinking is being applied to the civilian world. Today, more than ever before, peoples of the world are demanding leadership in all fields of human endeavor. Those of us in the engineering profession, responsible as we are along with the scientists for having created a dynamic and potentially dangerous situation in the world, must step forward now and be counted. In the past, national leaders have risen from among engineers, but today, we are in danger of losing control of our own profession through default. Strong and active leadership is needed in many areas; and in this article I shall mention a few specific instances where this need. if left unfilled, can have serious consequences to my Corps, our profession, and to our nation.

FIRST among these is the *quality* of engineering work produced today. As always, there are those who take pride in producing nothing but the best. And there are also those inevitable few who are simply over their heads and in due course will be eliminated. There is nothing remarkable about the present size of either of these two categories of engineers.

What is of real concern to me, however, is the gradual acceptance on the part of the average engineer in the average firm of an attitude geared to just getting by and no more. A continuance of such an attitude in any large segment of engineering firms will lead inevitably to a deterioration of the over-all quality of American engineering and a decrease in the confidence and esteem of those we serve, which it has always been our good fortune to enjoy. We cannot afford to let this come to pass.

Many reasons can be found to explain this incipient

View of Locks No. 2 on the Monongahela River at Braddock, Pa., built by the Dravo Corporation for the Army Engineers.

deterioration of work-quality. In the final analysis, perhaps, it all stems from the present state of international unrest which has raised the Federal Government to the permanent status of our profession's best customer. At the start of World War II and with the advent of the Korean situation, the profession sprang willingly to the assistance of the Government. This was something that they could understand—something they had done before. And in both instances, American engineering did itself proud.

But in the continuing Cold War—this strange new era of half-war, half-peace in which we are now living—our profession is confronted with an entirely different situation unlike anything it has ever seen before. It is baffled and frustrated by the alternating build-ups and cut-backs, the evershifting work sites, the constantly changing criteria, the hurry up and wait atmosphere of making ready to fight an enemy, who under our philosophy of government, must have the final say as to the time and the place. Our greatest hope as a nation is to maintain such a state of preparedness as to convince that enemy that at no time or place will he ever be assured of anything but swift, sure and terrible defeat.

Those engineering firms which have engaged in government work have been caught up in the accordion-like effects of our international actions. The inevitable result has been a tendency on the part of many architect-engineer firms to become mere brokers of engineering labor. In our expedited programs, quality has become subordinated to quantity—and creative engineering has come to be expressed in terms of man-hours.

I can tell you that there is every reason to believe that the present state of cold war will continue with its fits and starts for an indefinite period and that the engineering profession can expect no relief on that score. As the chief of the largest government construction agency, I can assure you that the over-all quality of the engineering support we are receiving must be improved to the point where there can never be any question but that the tax-payer gets what he pays for. As a soldier, an engineer, and an American, I ask you: What are you going to do to maintain and raise the quality of engineering in the face of continued adverse conditions?

One insidious influence on both the quality and quantity of engineers, the full impact of which is scarcely yet being felt, is the general drift in public schools away from mathematics and science towards the so-called social studies. The mental discipline of the three R's has been thrown overboard in favor of "happy, well-adjusted children." As you can recall from your own school days, not many children derive joy from pursuing the logic of Euclid, yet the study of mathematics is the foundation of all engineering. And if that foundation is faulty or lacking, what will become of the superstructure? Either we must be prepared to lower our standards to accept the socially-adjusted products of a "happy," but intellectually-empty, childhood or we must be prepared for a really serious shortage of engineers.

LET me cite to you a few figures. In the school year 1948-1949, of all the public high school students in the United States, the percentage enrolled was only 15.1 in elementary algebra; 5.4 in intermediate algebra; 8.7 in plane geometry; 1.4 in solid geometry; 1.6 in trigonometry; 5.9 in chemistry; and 4.0 in physics. In a study of 200,000 students, only 6 per cent of the eighth graders examined could find 2.1 per cent of 60. In a test given the freshman class at the University of Michigan, only 66 per cent could multiply 2½ by 3¼ and only 68 per cent could express 3/20 as a decimal. They made a slightly better showing in dividing 7,642.38 by 1000—81 per cent solved that knotty problem correctly.

All this is serious enough just on the surface. At the

very best, it means lowered standards of engineering education and lowered standards of living. But of far graver consequence is the very real threat that while our fine engineering educational system is being starved to death through lack of adequate raw material, our enemy is making substantial gains in this same field. In spite of all that you may hear about barbaric conditions in Russia today, there is nothing backward about their technological training. From all that we can gather of their engineering schools, their students are fully prepared for advanced work at entrance; their schools are well-run; their courses of instruction, although generally similar to ours, are considerably longer and somewhat more rigorous with great emphasis placed upon field work; and their finished product—the graduated engineer—seems to be of excellent quality.

In an age of technology, our country can ill afford to permit any progressive sapping of her technological vitality at a time when our enemy is making steady engineering advances. I ask you therefore: What active, positive, and continuing steps will the engineering profession take to increase the output of properly trained engineers from our American educational system?

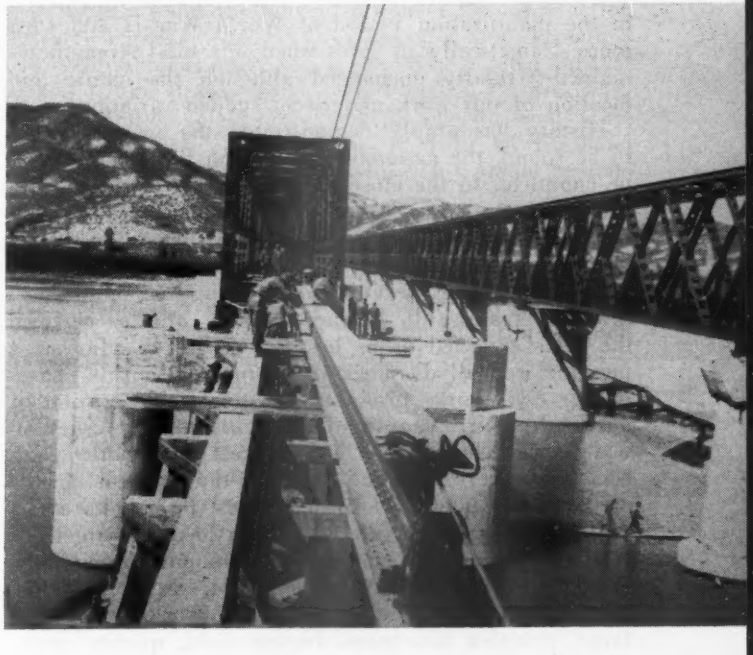
More than ever before, the most dangerous and difficult period of war for our country will be that of mobilization. It is unglamorous, trying, tedious, and often seems unrewarding for those individuals who are engaged in it. And yet, the most important phase of any war is its mobilization period, for here is assembled the machine whose original adequacy or inadequacy will determine the final outcome. And, as against our fortunate past, in the future this period may well be the time of peak hostile attack.

There is one particular phase of the mobilization period in which we as engineers have a vital responsibility. Chronologically speaking, the first real sign of activity is the construction effort. Without the necessary real estate, cantonments, training facilities, hospitals, depots and utilities, large numbers of men cannot be assembled for training. Without the necessary industrial plants and munitions factories, soldiers cannot be armed and equipped. Without the necessary warehouses, ports, railways and roads, armies cannot be moved into the field and supported in battle. Our first requirement, then, for rapid mobilization is a strong, extensive, experienced engineering organization-in-being.

I SAY organization-in-being because the first draftees must go into training—not into the formation of construction battalions to build the facilities to support the Armed Forces. Nor will there be time while the bombs are falling to organize our civilian engineering profession and construction industry for the necessary effort under the aegis of a new war construction section of another governmental department. The Germans tried "Organization Todt" and failed.

That is why we in the Corps of Engineers consider it so essential that our design and construction force must be a going concern at all times. That is why our civil works, on the surface so seemingly unrelated to our military work, are actually so vital to the Armed Forces and to the Nation. For while accomplishing useful and necessary work in the field of water resource development, it permits the Corps of Engineers to maintain a fairly steady work load, running about 50 times higher than it normally would in peacetime military construction alone. As a result, we can maintain a stable, effective organization capable of assuming an immediate war load overseas as well as at home. The value of this capability has been amply demonstrated

Above: A 500-man enlisted men's barracks built by the Corps at Fort Richardson, Alaska. Below: Men of the 84th Engineers build a Bailey bridge at Waegwan, Korea.



Below: The Corps of Engineers supervises construction of warehouses in Manila, P. I.

The author, right, presents the Ohio SPE's citation and award to Dr. D. B. Steinman, left, in honor of the bridge-builder's outstanding service to the profession, at a recent Ohio meeting. T. Carr Forrest, Jr., NSPE President, is shown in the center. Dr. Steinman was NSPE's first president.

in the mobilization period of World War II and even more dramatically in 1950 when our total strength remained virtually unchanged although the nature and location of our work underwent sudden variations.

History has amply demonstrated the principle that to be sound, the national organization for defense must be complete. In the closely related fields of design and construction, the successful organization is the one that is well-rounded and experienced in all phases of design, procurement, construction, operation, and maintenance. Our engineering organization-in-being is, and must always remain well balanced, if we are to perform the tasks expected of us in time of war. Insofar as is possible we will do our own engineering in all phases of our civil works program, for this stable portion of our load requires coordination and planning on a nation-wide scale. The construction of most civil works projects has a very real influence on the lives of people all over our land, and projects must be monitored by an engineering force fully versed in local requirements, vitally affecting past and future economic life in large regions. Therefore, we must be able to draw on nation-wide experience in the design and construction of such large, complex structures. In this field, quality reigns supreme and we cannot afford to take chances on less experienced help, however willing it may be.

But on the other hand, the impact of our military program lies along standard lines, follows widespread construction practices, and is felt mostly in local communities by virtue of a channelized increase in existing business volume, after only temporary rather than major changes in economic patterns.

The different effects of these two factors—type of structure and local impact—on civil and military public works therefore constitute the primary considerations affecting our use of architect-engineer firms, coupled with that third, but vitally important factor of war-speed. For when we are fighting for our lives, speed is of the essence and to this end we are decentralized so as to utilize to the fullest advantage the wealth of engineering talent throughout the United States, which is experienced in the type of work involved in mobilization; and at least 95 per cent of our vast military construction load today is in the hands of architect-engineers.

WE will continue to look to civilian engineering firms for specialized work in our Civil program and for assistance across the board in meeting our peak military loads. In the present state of world unrest, it is likely that, although it will fluctuate, our military construction load will continue heavy and we will rely on civilian firms for a very sizeable amount of work. But under the law, there are certain functions and responsibilities of which we as a Federal agency are not permitted to divest ourselves. And as members of a military organization and as Americans, we will not countenance any weakening or destruction of our integrated, well-balanced, engineering organization-in-being in which our Nation's safety has so much at stake.

I am sure that if the position of the Corps of Engineers on this subject is fully understood by the engineering profession, many current misunderstandings and difficulties would evaporate. I hope to receive the support of the profession in achieving such general understanding. And so I ask you: What will the engineering profession do to assist us in improving and maintaining in full readiness for war, America's military construction force-in-being?

It is no trade secret that what goes up must come down. Without wishing to be put in the light of an alarmist or a pessimist. I might observe that this axiom appears every bit as true in the field of economics as it is in the realms of science.

We are living today in a time of plenty. There is more work to be done than there are people available to do it. But, unless we have unwittingly arrived at the millennium, well within the span of our lives there will arise the need for another national public works program.

And so it might be well to glance very briefly at what occurred the last time our Nation undertook a public works program for the primary purpose of producing useful employment. That program was inaugurated on very short notice—as most certainly will be the next one. The initial effort was in the PWA where Federal assistance was used to stimulate private enterprise to assist itself. But, although there were many notable exceptions, our engineering profession was unable to keep ahead of the construction forces on a nation-wide scale with the result that the Government was forced to choose between abandoning its work or changing its scope. The result was the WPA which certainly gave badly needed employment and some desirable work, but which because of a lack of prior comprehensive planning, failed to realize the full potential of its vast manpower.

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About the Author . . .

Gen. Sturgis

The present chief of engineers, Major General Samuel D. Sturgis, Jr., is a distinguished member of a prominent Army family. His father, in World War I, and his grandfather, in the Civil War, both attained the two-star rank of major general.

General Sturgis graduated from West Point in 1918 and since that time has held every command that it is possible for an engineer officer to achieve. During World War II, as chief engineer of the Sixth Army he directed the building of airbases, ports, and Army construction in amphibious operations from Australia to Japan.

The awards he holds include the Distinguished Service Medal, the Silver Star, the Legion of Merit, and the Bronze Star Medal.

Milwaukee Ready for Gala Meeting in June

By Arthur C. Flamme, P.E.,
Milwaukee Chapter, Wisconsin SPE, NSPE

EARLY program notes released for this review indicate that the program committee, headed by Orrin E. Andrus, has done an unusually good job in working out plans for the N.S.P.E. meeting at the Schroeder Hotel in Milwaukee on June 9, 10, 11 and 12, 1954. Not only will a variety of subjects and activities of interest to all members be provided, but there will also be ample opportunity to pursue more specialized, individual interests.

Most noteworthy in this respect is the arrangement made for tours of various plants in the Milwaukee area. The splendid cooperation of the local industrial community has made it possible for members to visit practically any type of industry, or even any specific installation, regardless of whether the group interested in making a particular tour is large or small. In a great many instances it will even be possible to arrange an inspection trip where only a single visitor is interested.

Needless to say, Milwaukee is a city of varied industries, with some unusual public and private installations. Drop forge installations, heavy machinery, motor control, outboard motor, air-controlled engines, electric machinery represent only a few of the industries which have extended cordial invitations to visitors. These plant visits are scheduled for the afternoon of Friday, June 11.

At least one of the principal addresses (noon luncheon, Friday, June 11) and one important panel (Saturday, June 12) will deal with the engineering field in broad, far-reaching terms. At the luncheon Dr. Frank D. Slutz, renowned educator and lecturer, will speak on "The Reach of Engineering." Dr. Slutz, who is widely known for both his ideas and for his practical work, has spent over 50 years in counseling and teaching young people the meaning of his preachment that "it is not the gale, but the set of the sail that determines the direction of the ship."

The Saturday panel will consider the subject "Evaluation of Engineering Education." All members will be invited to participate in the discussion of this subject, perhaps one of the most important basic themes that could be raised at the professional level. Presiding will be Mr. Willis R. Woolrich, Dean of Engineering at the University of Texas, chairman of the N.S.P.E. Committee for Education, and the past president of the American Society for Engineering Education. Panel members include G. F. Branigan, Dean of Engineering, University of Arkansas; N. W. Dougherty, Dean of Engineering, University of Tennessee; Maynard M. Boring, Manager of Technical Personnel Development, General Electric Company; John Gammell, Supervisor of Sales Training in the Graduate Training Section, Allis-Chalmers Manufacturing Company.

TO turn for a moment to lighter matters, the program committee has not failed to provide the unusual in the way of entertainment. And where but in Milwaukee could you hope to watch the famed Milwaukee Braves in action (Friday evening, June 11), or enjoy a tour through a nationally famous brewery? It should be pointed out that tickets to the Braves' game with Philadelphia are available in limited quantities. Send $2.50 with each ticket requested to Mr. J. Randall Meyer, 3112 W. Highland Boulevard, Milwaukee 8, Wisconsin. This should be done immediately.

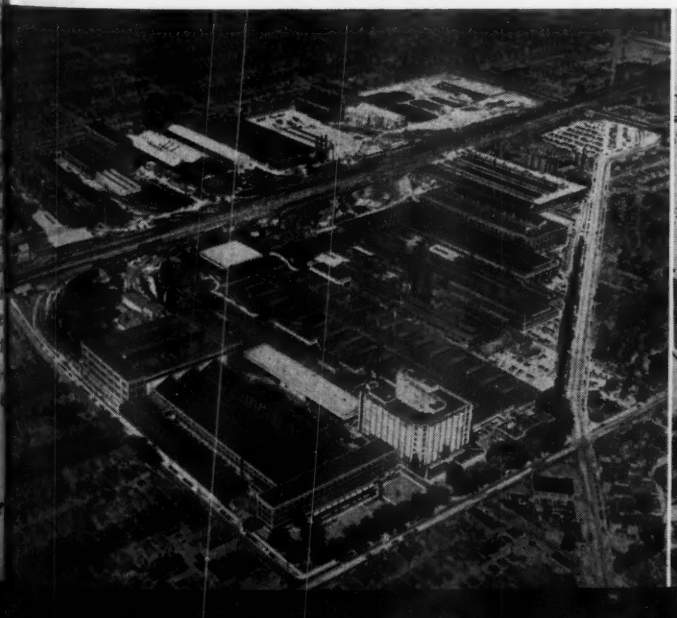
A chronological run-down of the four-day meeting would read as follows:

Wednesday, June 9, will be entirely devoted to Executive Committee meetings. After 4 p.m., registration can be made on the fifth floor of the Schroeder Hotel, which is headquarters for the meeting.

REGISTRATIONS will continue on Thursday, June 10, with the official opening of the program for all members taking place at 9 a.m. Friday. A welcome address will be given by the Honorable Frank P. Zeidler, Mayor of Milwaukee, after which the professional meeting will get underway with Mr. T. Carr Forrest, Jr., NSPE President, presiding. Topics to be discussed at this opening meeting are: President's Report; Treasurer's Report; Execu-

(*Continued on page* 31)

Left: One of Milwaukee's many modern industrial plants. Right: The City of Milwaukee with the Schroeder Hotel, meeting headquarters, in the center background.

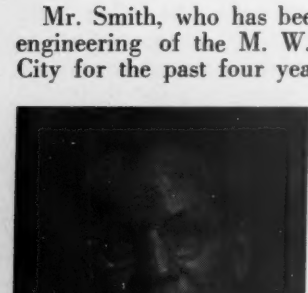


Should Corporation

Editor's Note: **The issues involved in the debate over corporate practice of engineering have spread to all parts of the Nation, although the center of the controversy has been in New York State. Because of the national importance of the question, NSPE has appointed a Corporate Practice Committee to study the basic elements of the situation. At a recent debate in New York, sponsored by the Metropolitan Section, ASME, spokesmen of the New York State Society of Professional Engineers and the corporation-sponsored Committee on Engineering Laws argued their respective positions. The text of the remarks of the lead-off speaker for each side is presented in the hope that the presentation will inform and clarify the issue facing the profession.**

Yes! *says Ronald B. Smith, P.E.*

Mr. Smith, who has been vice president in charge of engineering of the M. W. Kellogg Company of Jersey City for the past four years, is a graduate of the University of Washington from which he received both B.S. and M.E. degrees. In addition, he holds an M.S. from the University of Pittsburgh and has done graduate work at Pennsylvania and Michigan.



Mr. Smith

A registered P.E. in both New York and Pennsylvania, he has also been vice president in charge of engineering for The Elliott Company, a consultant for the Packard Motor Car Company, and has worked for the Westinghouse Electric and Manufacturing Company.

He is a member of the American Society of Mechanical Engineers, the American Institute of Chemical Engineers, and other scientific organizations.

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THE purpose of the Education Law of the State of New York is to provide, by legal means, safeguards for the life, health, and welfare of the public. Article 145 of the law, which is concerned with the practice of engineering, defines the qualifications and requirements for registration, as well as the penalties for malpractice. As presently written, however, this article goes unnecessarily into the mode of organization by which the practice of engineering can and cannot be carried out. The controversy which has arisen within engineering ranks in the last two years and which is now before the legislature in Albany is wholly concerned with this problem of organization.

The purpose of the Committee on Engineering Laws is to introduce amendments to the Education Law which will strengthen the legal provisions for the safeguard of life, health, and welfare of the public, and at the same time provide alternate organizational forms for the practice of engineering which are in keeping with the tempo of modern times and are ultimately for the best interest of the Nation as a whole.

The present law specifically prohibits the practice of professional engineering by corporations unless "organized and existing under the laws of the State of New York" prior to 1935. Only three other States (Ohio, Rhode Island and Washington) support this type of restriction.

Now the organizational form in itself, whether it be individual, partnership, or corporation, can obviously have no real bearing on protecting the welfare of the public. If it did, this controversy would have been resolved by public insistence long ago. Instead, we find any number of corporations with explicit legal status operating in fields where public safety is involved. Our city governments, wherein many professional engineers are employed, are corporations whose chief executive seldom is proficient on technical matters; Public Service Corporations are specifically exempted from the law; Construction Corporations, wherein the public safety depends greatly upon the diligence not alone of its management but upon its detailed superintendence, are encouraged by law; Manufacturing Corporations in the fields of aircraft, machinery, power equipment, chemicals, and a host of others, where engineering excellence is of paramount importance to public safety, are also eligible under the law. In fields apart from those strictly technical, such as finance, transportation, pharmaceutical, food processing, and communications, it has been found entirely feasible to provide safeguards which have proven satisfactory to the public at large. There is no public clamor, nor any significant individual argument, to alter the organizational form of any of these businesses because as corporations they cannot be regulated and will not respect the public welfare. Only in the field of "professional engineering," and then only in four states, does this guild argument arise.

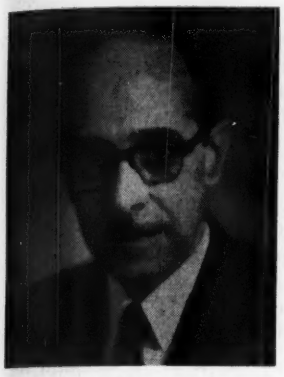
Professional engineering is defined in the Education Law as the performance of "professional service, such as consultation, investigation, evaluation, planning, design or responsible supervision of construction or operation, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works or projects wherein the safe-guarding of life, health, or property is concerned or involved, when such professional service requires the application of engineering principles and data." Since it is apparent that this definition can be applied to nearly all engineering activity al-

(*Continued on page* 16)

Practice Engineering?

No! *says V. George Terenzio, P.E.*

Mr. Terenzio, a prominent New York civil engineer, holds both B.S. and C.E. degrees from the College of the City of New York. He is currently employed as division engineer in the Research and Development Department of the New York Board of Water Supply.



Mr. Terenzio

A member of the Executive Committee of the New York State Society of Professional Engineers and a director from the Society's Zone 4, Mr. Terenzio is currently completing his sixth year as chairman of the NYSSPE's Ethical Practices Committee. In addition, he is currently serving on the National Society's Ethical Practices Committee.

He is a past president of the Westchester County Chapter of the New York State Society, and he is also an active member of the American Society of Civil Engineers.

▼ ▼

WE are here concerned with the 34-year-old law that prescribes for and controls all professional engineering practice in the State of New York. We are concerned with the determination of forty corporations, many of them engaged in construction, manufacturing and allied activities, to change the complexion of that practice through a substantial alteration of that law. We are finally concerned with the right and reason of the New York State Society of Professional Engineers to oppose this determination of the corporate interests. Thus in clear and unequivocal terms you have the outline of the conflict which has led to this discussion.

A breakdown of the issues is not so easily delineated. The necessary complexities of a statute, imposed by the public for its own protection upon an entire field of human endeavor, are difficult to clarify and are easily distorted. The position of the State Society, the only organization dedicated exclusively to the protection of public and profession alike, through support of that law, has been seriously misrepresented. The arguments of those who would change the law have been so phrased that the real impact of their proposal is not readily visible. Much of this cannot be cleared up in the allotted time, but we shall do our best.

The Engineering License Law is important for three reasons: (1) because it measures engineering performance with the yardstick of public safety; (2) because the competence and character requirements which it imposes upon those who would practice engineering are the very cornerstones of a learned profession; and (3) because it fixes the inescapable responsibility for the proper performance of engineering.

The license law is based upon the axiom that professional competence is the permanent and exclusive property of the individual practitioner. He may lend this property to a corporation, and in all instances other than the one at issue the law permits him to, but this property is so inseparable from his person that it enters and leaves the halls of the corporation as certainly and as frequently as does his shadow. As soon as one recognizes that no corporation possesses a permanent competence of its own and that any competence of which it may boast is simply borrowed from its staff, dependent strictly upon the good will of that staff, then one can understand the first reason why the State Society is opposed to admitting the corporations into the engineering fraternity with equal rights to dispense consultation services to a trusting and dependent public.

Chief Justice Marshall once issued the dictum that a corporation is an "artificial being, invisible, intangible and in contemplation of law." No one will deny that a corporation is a business expedient for the making of money while minimizing the risk and responsibilty. The ease with which it permits the concealment of individual identity is also well known. But as necessary as these corporate characteristics may be in the world of "Caveat Emptor," they are foreign to and unwelcome in a profession where dedication to public interest and the reputation of the practitioner are prime requisites. Thus you have a second reason for our opposition.

It should be made clear at this point that the only type of corporation here at issue is one organized after 1935 to dispense consulting services to the general public. Similar organizations functioning in New York State prior to that date have the legalized right to continue functioning. The reason is that the Bill of Rights does not permit the prohibition or punishment by law of an act which has become unlawful subsequent to its commission. Many of you recognize this as the doctrine of Ex Post Facto. In this connection it will interest you to learn that the limiting date was inserted in the law 19 years ago after certain individuals who had not been able to qualify for license discovered that they could practice despite the law, if they became incorporated. The date was thus inserted to apply to the future, by the legislature and the Governor (mind you), to close a loophole which had completely voided the law's purpose to safeguard life, limb and property. It should also interest you that, if the present corporate purpose is satisfied, the license law will return to that original state *with the single exception* that each corporation shall have at least one professional to serve as vice-president. Since, under corporation law, the president is the "boss" we would once again find non-engineers and incompetents in a position to enjoy the fruits of professional practice by proxy. Thus you have a third reason for our opposition.

I referred earlier to the corporate attribute of limiting responsibility and risk. If the present wish of the corporations were granted, the law would be opened wide for the formation of a myriad of corporations, with the minimum capitalization and limited to the execution of one single project. These could underbid the reputable organizations, as well as the private practitioners, thus effecting a serious deterioration of performance. Thus you have a fourth reason for our opposition.

It has frequently been implied that the State Society is unalterably opposed to all corporate practice. This is definitely not true. The law recognizes, and the Society agrees, that corporations whose prime function is the production of machinery and equipment born of en-

(*Continued on page* 17)

Yes!

(*Continued from page* 14)

ready successfully, and from the public standpoint safely, carried out in multitudes of corporations throughout the land, the special status of professional engineering, insofar as technical activity is concerned, is fictitious and the argument that it cannot be safely practiced by corporations is untrue. Overwhelming evidence exists that, in principle, professional engineering is, and has been for years, safely and competently carried out by corporations, and with the safeguards of the Carlino-Milmoe Bill, it can be safely carried out in New York State also.

It is interesting to note that this view was also held by the citizens of this State for many years. The first engineering legislation for the protection of the public welfare was enacted in New York in 1920. From 1921 to 1935 the statute provided for the practice of professional engineering by corporations providing those who carried on the practice were licensed engineers. In 1935 the restrictions on corporate practice were added. In view of the overwhelming evidence even today of successful and safe corporate practice, it appears highly probable that this restriction was added more from the standpoint of personal than public interest.

There is nothing evil or undignified in the corporate form of business. To oppose it, in view of the tremendous industrial advances of the last century, is to be unrealistic and out of tune with modern life. In the beginning of the 19th century, the classical economists predicted a drab future for the world based on the law of diminishing returns and the increasing pressure of growing populations. Today it is agreed that their predictions are unrealized largely because they neglected the enormous influence of capital—in the application of production tools and research—to our modern civilization. Because of the limit on financial liability, and more recently in view of the domestic tax situation, corporations are the only form of business organization able to attract large quantities of capital and keep a significant portion of their earnings. It is from these funds that research ideas and new ventures have evolved. It is these developments which have confounded the predictions of our classical economists and brought the American way of life to the envy of the rest of the civilized world. Are we to neglect this well-established evidence and insist instead, that professional engineering be practiced only by an organizational form which is basically out of step with the rapid technological progress of our age? To do so is to revert to the argument of the guild craftsmen at the birth of the industrial revolution.

The modern engineering corporation not only conducts research, and develops new processes; it risks its resources by guaranteeing to a client the ultimate productive capacity of a project. Because the penalty for failure is great and the processes complex, it is generally necessary to assume responsibility for construction and for the initial operation of the whole project. All of these functions require capital to a degree that is hardly ever available to an individual or to a partnership.

Technological developments of such scope require a corps of engineering specialists working in harmony. Whether it pleases us or not, the scientific developments of the twentieth century, in medicine or in engineering, have resulted in specialization. With this evolution has come, on the part of the individual, a degree of economic dependence upon reasonably permanent employment. This condition can seldom be satisfied by partnerships in view of the limited capital accumulation permissible and the problems of succession to which any but a corporate structure is vulnerable.

Many have said that the modern engineering corporation, with its multitude of specialized divisions so necessary for the execution of gigantic enterprises involving all the branches of our profession, will create too narrow a professional background. Patently, this is a false belief, for, if a man desires breadth, and in the principal engineering posts there is a great demand for breadth, he can continue his training and develop as extended an outlook as his mental stature can comprehend. Corporations are unique in their programs for the building of executive talent capable of directing complex operations.

Having demonstrated the fact that engineering has been successfully and safely carried on for years by corporations; that the corporate form of organization is, for the large engineering enterprises, the only practical form able to attract the necessary capital and assure succession; and that the large corporation offers opportunity for broad professional development that is conscious and unique, why should we not proceed without further ado to admit the corporate, as well as other forms of engineering practice? All of us with a sense of professional responsibility admit the need for regulation in the interest of public welfare. The Carlino-Milmoe Bill now before the legislature in Albany attempts to supply regulation of corporate practice by the following means:

1) **It requires that each corporation desiring to practice engineering be registered.**
2) **It places the ultimate responsibility for the technical performance of a corporation upon a licensed engineering executive hav-**

(*Continued on page* 31)

No!

(*Continued from page* 15)

gineering knowledge should be permitted to practice the engineering necessary for such production. The law further recognizes, and the Society further agrees, that corporations in the public utilities field, in public service, in interstate commerce, and on Federal work which are governed by other regulatory statutes should not be subject to the license law, thus to avoid confusion through multiple regulation.

The corporations in this controversy have pointed to these exempt practices as discriminating against them. If such is the case, then it would be analogous to a criminal of today claiming discrimination because at some time in the past his crime had not been specified at law. If this were the case, then no disciplinary law could ever be written and the body statute of this country would soon become static and outmoded. To drop the estoppel date would be a step backwards; hence you have a fifth reason for our opposition.

It might be well to show here that in every instance of corporate exemption the law insists that top responsibility, as well as actual responsibility, shall rest with qualified engineers. In short, the law never once permits responsibility for proper performance to be transferred to a non-engineer. As the corporations are in effect suggesting the transferral of top responsibility to just such an individual in the guise of a "controlling person," you have a sixth reason for our opposition.

The corporation spokesmen have placed great stress upon the financial aspects of corporate engagement in engineering. They have talked about investment wealth on the one hand and tax benefits on the other. In short, they view engineering as a business rather than a profession,—as a commodity to be sold in trade rather than a service to be rendered. They are advocating financial priority over professional skill. They forget, or shall we say deny, that the license law is concerned with competence of performance and competence alone. At no stage is competence measured by the wealth of the practitioner. Wealth may follow competence, but it cannot by itself produce competence. As for their argument regarding the tax advantages of the corporate form, they are in actuality suggesting that, if there is a fault in the tax laws, it should be remedied in the license law. It should be obvious that, if the engineer's practice were hooked to the tax wagon, he would have a rough ride indeed. The absurdity of this position constitutes a seventh reason for our stand.

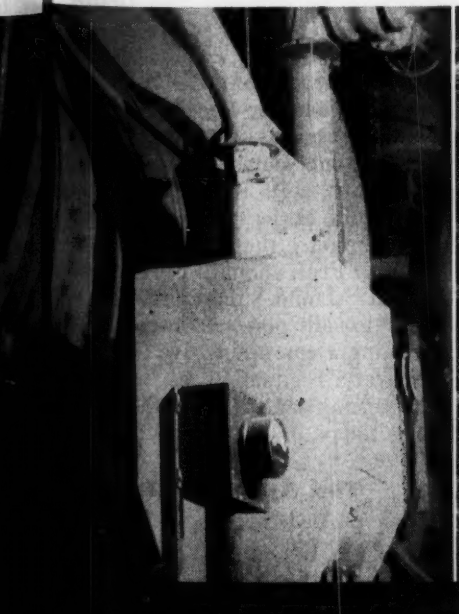
The corporate spokesmen have threatened the loss of engineering employment and the falling off of engineering progress, if the law is not changed to suit them. Our eighth reason follows very simply upon the fact that, during the 19 years that the present law has disbarred the type of corporate practice sought, engineering in New York State has made noteworthy progress. Furthermore, during that same period the employment statistics here have been no different than elsewhere and we have even seen a period when there was an insufficiency of engineers. Please do not forget that eleven of these forty corporations are now registered to engage legally in this State. The reasons of this particular group for wanting to weaken the statute could bear close scrutiny.

What the corporations are asking can be summed up in very few points—

1. **They want all restrictions upon corporations removed.**
2. **They want the level of professional responsibility within the corporation lowered from the chief executive to that of a vice-president.**
3. **They want to make it possible for the chief executive to be a non-engineer with the designation of "controlling person" and whose sole qualification could be the ownership of stock.**
4. **They propose the establishment of certain new disciplinary procedures under which the engineers in the corporation could, in the event of failures, be disbarred from practice for all time. The controlling persons would, of course, be eliminated from engineering, but they could reinvest and continue in some other endeavor. Briefly then, the engineer would sacrifice his career—the controlling person would not, since money is his business.**

Viewed as a whole, these proposals seek to enter the engineering field at this time and eventually to take it over in entirety. Only the unrealistic would fail to appreciate the hidden pressures within this arrangement or question the motives of a corporate group in attacking a law under which eleven of the forty are now practicing without question. To the State Society this effort appears very clearly as a concerted attack with the ultimate purpose of entering the tent like the camel and displacing professional control with that of non-professional "controlling persons." You thus have a ninth and very potent reason for our objections.

In a flyer issued by the forty corporations on January 28 most of you were told that the New York State Society of Professional Engineers was a threat to engineering. In view of the nine reasons which have just been advanced we find strong evidence that the threat may lie in the other direction.—***End.***



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Civil Service Revises Method of Reviewing Engineers

A significant step in the review of the qualifications of applicants for engineering positions with the Federal Government was taken recently when the Civil Service Commission issued Announcement No. 383 for an unassembled examination for engineers in 21 fields of specialization.

Under the new review policy, seven boards of engineering specialists have been set up to evaluate the qualifications of persons submitting applications; and for the first time applicants in the various fields will be assured that their eligibility for appointment will be graded exclusively by professional engineers practicing in the particular specialty in which employment is sought.

Heretofore, while the Civil Service Examining Boards always included experienced engineers, the applications which came before them were not limited to those in their own field or fields of qualification. Now, however, if a mechanical engineer files under the current unassembled test, his application will be reviewed by a specialist in the mechanical engineering field. Furthermore, if he wishes classification in a second field in which he has also studied or had experience, his qualifications in that specialty will be reviewed by an equally-qualified engineer.

The fields covered by Announcement 383, which has no closing date, are: automotive, chemical, civil, general, industrial, sanitary, electrical, fire prevention, internal-combustion engines, materials, mechanical, ordnance, safety, architectural, construction, structural, electronics, ceramic, hydraulic, petroleum production and natural gas, and agricultural engineering.

In addition, another unassembled test for aeronautical engineers, naval architects, marine engineers, and welding engineers is covered by Civil Service Announcement No. 386. Most of these positions are with the Department of the Navy, and again the review of the applications will be made by appropriately-qualified experts.

In each instance, also, when qualifications are evaluated, consideration will be given to such evidence of attainment as registration as a professional engineer or engineer-in-training, certification by the National Council of State Boards of Engineering Examiners, and membership in professional and technical societies.

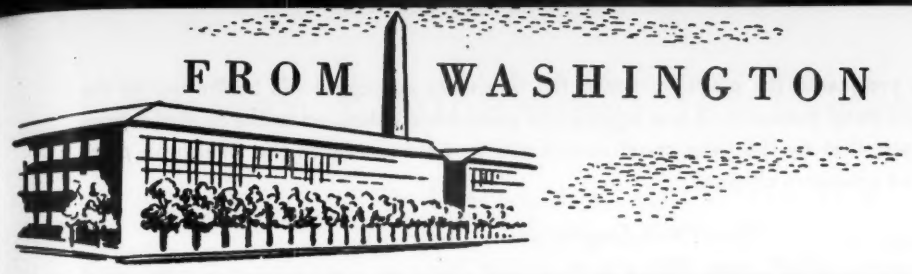
Engineering Enrollments and Degrees Reported for 1953

Engineering students comprised 8.6 per cent of the total college population in the fall of 1953, as compared with 8.2 per cent in 1952 and 7.8 per cent in 1951. If restricted to male students, the ratios for 1953 and 1952 are 13.4 and 12.7 respectively. These figures were recently reported by the Department of Health, Education and Welfare.

More than one-half of all undergraduate engineering students were enrolled in three fields of engineering in the fall of 1953—mechanical, electrical, and civil engineering, accounting for 20.7, 20.0, and 13.3 per cent of the total respectively. And enrollment in electrical engineering increased more than that in the two other fields.

The preceding June there was a decline in the number of first degrees conferred in engineering, which reflected the small size of the freshman class four years earlier. The total number of first engineering degrees was 24,164, or 7.9 per cent of all first degrees conferred in institutions of higher learning in June of '53.

This information is contained in the Department of Health, Education, and Welfare's Circular No. 387—*Engineering Enrollments and Degrees, 1953*. The statistics cited are the result of an annual study conducted under the joint auspices of the U. S. Office of Education and the American Society for Engineering Education. The report presents data supplied by 210 institutions, 149 of which are accredited in at least one engineering curriculum by the Engineers' Council for Professional Development, and it should, therefore, be of value to all persons interested in obtaining a comprehensive picture of the over-all situation as regard to engineering education in the United States today.



By
Milton F. Lunch,
N.S.P.E., Legislative Analyst

EMPHASIS ON PUBLIC WORKS

Two main threads of suggested courses of action continually run through the discussions involved in meeting the alleged recession or "slow down" in the economy—tax relief of various kinds for producers and consumers which will release funds for expansion and place more dollars in the pockets of the consumers, and an accelerated public works program sparked by the Federal Government.

The tax thread is enmeshed in the legislative machinery, beset with economic theories and political mauling. The public works thread, however, is largely in a preliminary state with a groping on the part of Administration officials and legislators as to its possible form and scope.

Some of the Administration's economists have been devoting considerable time to studies of what is needed along public works lines insofar as the Federal Government is concerned, and how much of the financial burden should be assumed by the Federal Government. One recent unofficial report states that the economists have tentatively concluded that on the basis of immediate need alone the country could constructively use $100 billion worth of projects. This staggering figure is only that—a figure—and there is no thought in the most avid pro-public works circles that a program of such magnitude would be considered.

It is generally believed that the Eisenhower Administration will step up its appropriation requests for public works activities—generally on a Federal-aid basis with states and cities providing matching funds in most cases. Present appropriation requests for Federal activity in public works total in the neighborhood of $5 billion for the next fiscal year and the most optimistic estimate is that this might be raised by another 50 per cent.

More For Roads

In addition to the normal appropriations for Federal public works activities, such as flood control, irrigation, reclamation, power, airport, roads, schools, and hospital projects, and the like, some additional steps have been taken. For example, Congress has just completed favorable action on a two-year Federal aid-to-highways bill which will provide almost $1 billion per year compared to something under $600 million per year at present. Also, favorable action is proceeding on the Administration's request for $60 million annually for three years to be used as grants-in-aid for the construction of diagnostic centers, hospitals for the chronically ill, rehabilitation facilities and nursing homes.

Under the Administration's housing bill, the program of supplying Federal funds for advance planning of public works will be resumed. The bill, as passed by the House, and as requested by the President, would authorize $10 million for this purpose, repayable by the states and local communities when the construction work starts. An attempt by Representative Wayne L. Hayes of Ohio to raise the amount to $20 million was defeated. According to the House Committee, the amount provided will cover preliminary plans for 2,200 public works projects with an average estimated construction cost of $300,000 each and a total construction cost for these projects of approximately $660 million. The Committee report commented:

"The advanced planning of such public works has long been recognized as a valuable tool in establishing and maintaining a high level of operation in the construction industry which is an important factor in the maintenance of a healthy national economy. A substantial volume of planned state and local public works could be very useful in helping to stabilize the construction industry, and, in turn, economic activity in general."

John C. Hazeltine, Commissioner of Community Facilities and Special Operations of the Housing and Home Finance Agency, which administers the program, has stated that, contrary to policies under

(Please turn the page)

the past advance planning programs, the plans for which the funds are advanced will be limited to the preliminary stages of the projects. Formerly, it was stated, the plans were extended to the final blueprint stages and it often happened that by the time construction was to be undertaken the final-type plans were outmoded and required extensive changes.

New PWA Suggested

A veritable flock of bills have been introduced in Congress within the past several months which would, in effect, revive the Public Works Administration program of New Deal years. Fairly typical of these many proposals is one by Representative Augustine B. Kelley of Pennsylvania to appoint a Public Works Administrator who would administer a $6\frac{1}{2}$ billion Federal-local works program, of which $3 billion would come from Washington. The program would be in addition to those already existing in the public works field and would operate on a financial ratio of $45 of Federal assistance for every $55 of state or local funds made available to a project. States and municipalities could file applications for Federal assistance in projects of construction, alteration, expansion, or repair of public facilities and public improvements, containing plans showing the work to be performed and the cost.

While bills of this type have practically no chance of passage this year, they do point up indirectly a secondary, but important, phase of the public works program insofar as the Federal Government is concerned; that is the administrative organization available to handle the present and potentially larger Federal activity in the public works area. Practically every agency of the Government today has its finger in the public works pie from an administrative standpoint. Through a series of shifts starting from the now-defunct Federal Works Agency, the advance planning program has wound up in the Housing and Home Finance Agency even though, curiously enough, the advance planning authority legislation specifically excludes housing from the program. There seems to be relatively little concern for this long-range aspect of a public works program. Representative Brent Spence of Kentucky, during the debate on the advance planning portion of the housing bill, attempted to place primary jurisdiction for projects concerned with health in the Public Health Service, but he was defeated on the ground that the Housing and Home Finance Agency now is liquidating the past advance planning programs and is the agency most broadly concerned with the planning and provision of community facilities.

Central Planning Agency

Evidently the Administration is relying upon a small staff in the Council of Economic Advisers to coordinate and provide over-all planning for the present and projected public works activities. The President has recently asked Congress to increase the appropriation for that agency of this office by $35,000 " . . . to provide for the expenses of a small staff in the Council to coordinate public works planning." Major General J. S. Bragdon (ret.), former deputy chief of the Army Engineers, has been made head of a special planning unit in the Council and presumably will, with the aid of the "small staff," concentrate on coordination and future planning of the federal public works program.

NSPE has long contended that the public works activities of the Government should be deemed of sufficient importance to warrant a separate specialized agency, preferably with Cabinet status, and that such an agency, headed by and staffed with competent professional engineers, architects and construction experts could provide the greatest efficiency and economy. The outlook for such an organizational change would not appear to be too bright in view of the present trend toward a further scattering of project functions among different agencies. To bring about such a change will require the resolution of internal governmental political jealousies, proper coordination arrangements with the agencies which handle other aspects of a particular program, and, above all, an awakening to the fact that Federal public works activities have become "big business."

The present outlook is that if a greatly expanded public works program emerges it will grow administratively, "like Topsy." Meanwhile, there are some moves toward unification, such as the proposed Public Facilities Administration which could develop into the nucleus of an idea leading toward the revival of a central public works or Federal works organization.

Nuclear Engineering: the Newest Branch

By LEONARD E. JOHNSTON, P. E.,
Manager, Idaho Operations Office, AEC, and
Member, Idaho SPE and NSPE

On July 16, 1945, at Alamogordo, New Mexico, a new branch of engineering was born. For three years engineers of all the then known branches had labored along with nuclear physicists, chemists and other scientists to produce the fissionable material necessary for an atomic bomb and to perfect the assembly of a bomb that would detonate with reasonable efficiency.

These men, applying the normal engineering approach to completely new problems, founded an industry that today is larger, in terms of capital investment, than General Motors, U. S. Steel, DuPont, Bethlehem Steel, Alcoa and Goodyear combined.

At the present time more than 7,000 engineers are engaged full time on operational activities for the Atomic Energy Commission and its contractors, as well as thousands more on design, construction and inspection of Commission facilities.

For example, at the National Reactor Testing Station near Idaho Falls, Idaho, there is a total of 379 scientific and technical people. Of these, 64 are biological and medical scientists; 58 are chemists; 33 are physicists, and 224 are engineers. The engineers are fairly well divided among the conventional branches of engineering; that is, chemical, civil, electrical, and mechanical, with a few metallurgical, ceramic, and others.

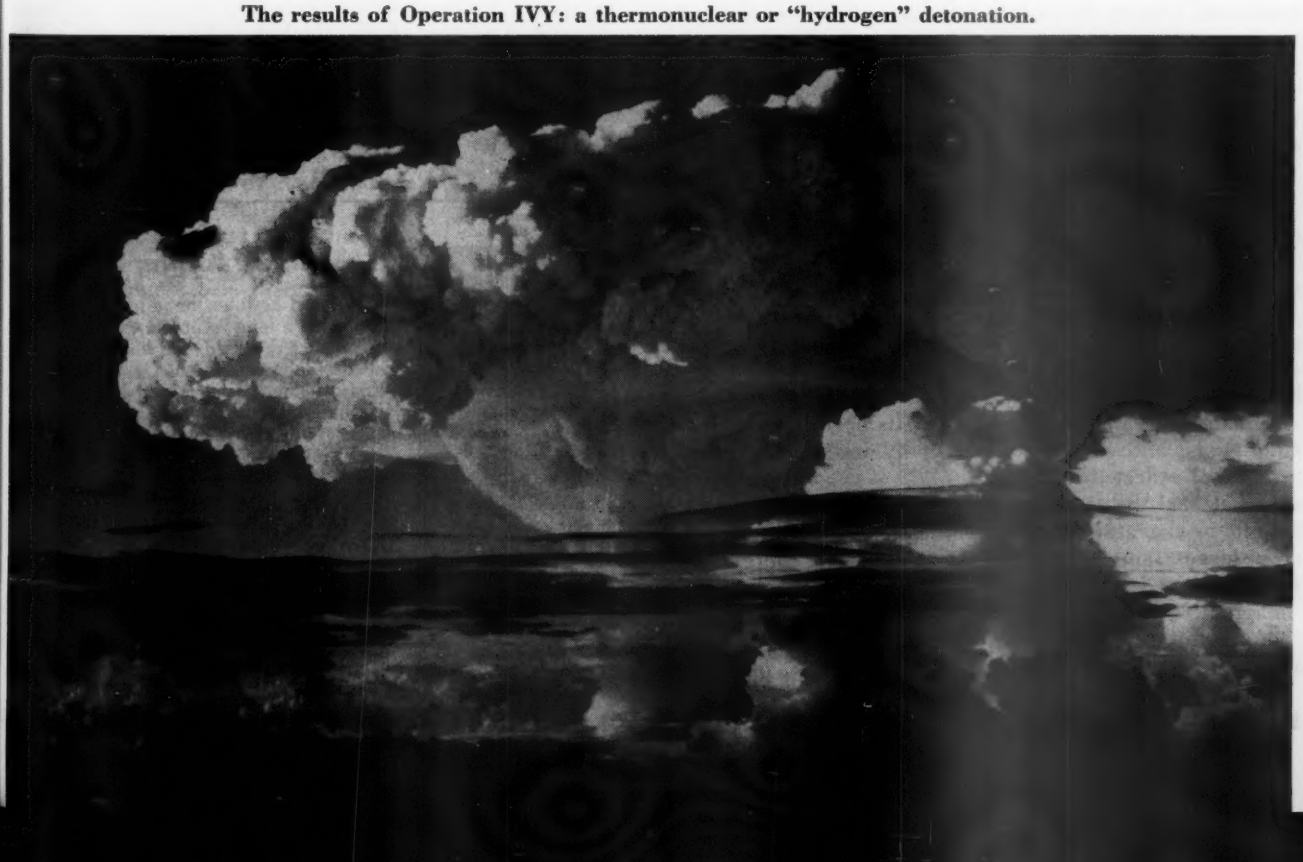
These engineers, working on nuclear problems, differ somewhat from those engaged in other lines of work. Working with physical and chemical scientists as teams they must carry a special background into this teamwork. The development, design, construction and operation of a nuclear reactor involve practically all of the various sciences and the know-how of all of the branches of engineering—coupled with the specialized knowledge of nuclear engineering.

Those working in the field have health problems to be taken into account to be sure that the personnel are protected from the intense radiation generated in reactors. They have the chemical problems of putting together the various alloys used in the construction of reactors; and the problems of reclaiming unused fuel from reactors after irradiation. They have problems of neutron conservation and of critical mass. They have structural problems of designing—many times with brand new construction materials—the heavy shielding and other structural components of nuclear reactors. They have the electrical problems of instrumentation and control. They have the mechanical problems involved in the development and design of entirely new pumps, motors—all of the gadgets that go with nuclear reactors. They have metallurgical problems in developing new alloys that will stand up under intense radiation and intense heat. All of these problems must be solved simultaneously and through close coordination and cooperation of the whole team. This teamwork is possible only if the engineers have accumulated background knowledge which will enable them to work closely with the chemists and physicists.

Engineers older in the business have grown up with it, and, by virtue of long association and study on their own have given themselves education in nuclear physics and pertinent phases of chemistry. This protracted "on-the-job" type of training is very costly, and not too full of inducements to the student, since it has not carried advanced degrees, with a few exceptions.

For a number of reasons, it appears necessary for engineering schools to take more notice in their curricula of this problem than has been the case in the past. The foremost of these reasons is this: Generally, industry

The results of Operation IVY: a thermonuclear or "hydrogen" detonation.



Oak Ridge, Tenn., School of Reactor Technology in session. Director, Dr. F. C. Vonderlage, lectures to a filled classroom.

has told the schools that it wants men trained in fundamentals, with industry furnishing the know-how. However, in the case of nuclear engineering, most of industry simply doesn't have the know-how. To meet the demand for engineers with nuclear backgrounds, schools are taking varying approaches. One is offering a complete undergraduate and/or graduate curriculum in nuclear engineering. As shown in a report made by R. C. Ernst, Dean of the Speed Scientific School, University of Louisville, four schools are offering majors in nuclear engineering. Three other schools are planning such programs. A total of 34 schools offer course work in engineering departments, but no degrees in engineering. One school is completing a reactor; three others are planning reactors, and two more are investigating the possibilities of utilizing such devices in the training of engineers and physicists.

Schools, generally and rightly, have been conservative in approaching nuclear engineering. They face many problems. One is the fact that few faculty members have nuclear engineering experience. In attempts to remedy this, symposia have been held on the role of engineering in nuclear energy development. Also, a Reactor Technology School has been set up at Oak Ridge. But these efforts are limited in nature. Another problem facing schools is the shortage of teaching material and suitable text books. Much information has been released by the AEC, but only recently have attempts been made to put this in usable form. Financing, of course, is another problem.

WHAT form this nuclear engineering education ultimately will take is not clear—there probably never will be uniformity. Some schools probably will hold it as a graduate program; others may undertake a major undergraduate program. Each school has its peculiar problems and goals, and solutions reached by individual institutions will reflect these.

Whatever the solutions reached, the graduates released to the atomic energy industry will be welcome. The largest single shortage in the atomic energy program is not in material things, but in trained, eager, imaginative minds.

A recent magazine survey estimates that of the 25,000 engineers expected to be graduated in 1956, one-fifth, or 5,000 will be hired by the AEC, private atomic industry and the Armed Forces. Even after that date, there appears to be little that will change the picture drastically. Industry is continuing to demand more and more engineers for its normal activities. At the same time, the industrial interest in atomic energy is continuing to increase, and this is going to make even more pronounced the demand for engineers with an atomic energy background.

There is no cure-all for this situation. But there is a technique that can be used to relieve it somewhat. Before there can be widespread interest in providing nuclear engineering education, there must be a recognized demand—and some sort of tag to place on the people who graduate from these courses. This demand—and this tag—can be achieved by recognizing nuclear engineering as one of the specialized branches of engineering. A nuclear engineer is one who has been given a good background in the fundamentals, and who has been given the usual training in an engineering specialty, such as electrical or chemical engineering. But in addition to that education, he has received a certain minimum training in the special considerations that must be given to atomic energy work.

Against this background it is recommended that the State Boards of Engineering Examiners seriously consider adding nuclear engineering to those branches in which they now grant registration.

Favorable action by the boards of the several states would accomplish these things:

It would bring necessary recognition to the newest branch of engineering.

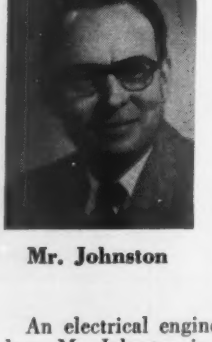
It would enable boards of registration, professional societies and universities to work in unison in the development of curricula.

It would lend impetus to the field by stimulating professional interest.

It would create a greater incentive for students to take nuclear engineering courses.

Finally, it would grant recognition to those now in the field who have made themselves specialists through their own initiative.

THIS move would materially assist in alleviating the shortage of specialized engineers. K. D. Nichols, General Manager of the Atomic Energy Commission and former District Engineer of the Manhattan District, said in 1949. "There is no mystery about atomic energy that good engineering cannot solve." The whole profession should strive to see that properly trained engineers are available to solve the mysteries.—***End.***



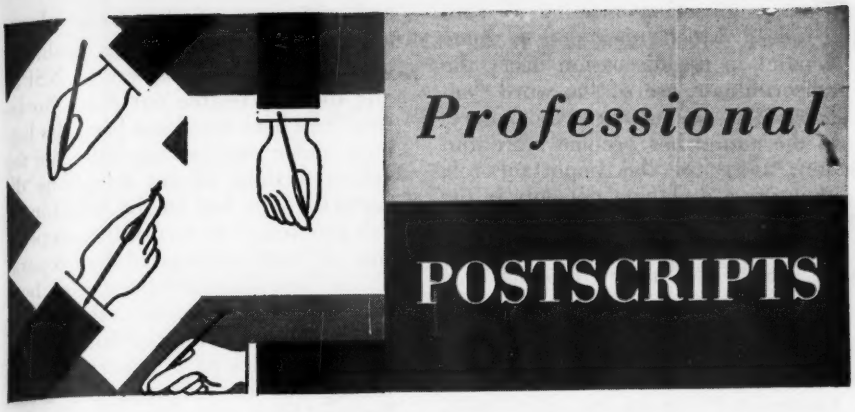
Mr. Johnston

About the Author . . .

Leonard E. Johnston, a native of Bradley, S. D., has a long record of experience in the atomic energy field. He has been manager of the Idaho Operations Office, U. S. Atomic Energy Commission since 1949, and prior to that he served for three years as manager of the Schenectady Operations Office.

During World War II, he served with the Corps of Engineers, rising from first lieutenant to major. Before being given the assignment to activate the Schenectady AEC Office, he served briefly as assistant director of operations for the Corps' Manhattan District.

An electrical engineering graduate of South Dakota State College, Mr. Johnston is a member of the Idaho SPE, NSPE, Sigma Tau, Delta Pi Chi, and many other organizations. He is a registered P.E. in both Montana and Idaho.



Professional POSTSCRIPTS

Well, it's May, and we hope that our readers will be able to escape the lawn-mower at least often enough to give the *American Engineer* passing attention. In any case, don't let the call of the outdoors lure you away from reading —PP— for here you keep abreast of what fellow engineers are doing and thinking. First off this issue is a short and interesting piece on engineering unions that will only take you seconds to read. It's from Harold H. White, a consulting engineer from Joplin, Mo. Engineer White.

—PP—

Dissusion of the pros and cons about 'unionization' for engineers has not received enough publicity to arouse the interest of many of those engaged in this profession. The subject deserves attention.

Our technical progress as a nation is due to the devotion of engineers to the problems of production which fall into their special sphere, but no other professional group is less sensitive to trends, political and otherwise, that seem to fall outside the technicalities of getting the job done.

A flock of sheep ready for shearing would desire their present situation, with a fringe element sharpening the shears that will provide them with the clothing they cannot earn in an atmosphere of technical competition.

A good engineer has no difficulty in establishing himself in our present industrial economy, things for him, in fact, "were never so good" and there is little argument about his remuneration if he can show ability.

What. therefore, is to be gained by collectivism under which the truly able would be called upon to subsidize the misfits who have no place in the profession at all? Herbert Hoover on a picket line would be something, indeed, even in this sensational age, and refusal of medical attention because the doctors were on strike would be on a par with it. It would seem that some unified action is necessary for the protection of the Herbert Hoovers of the future and universal licensing of engineers would appear to be a good first step. There are enough engineers in the country to enforce this requirement and they could be made to foresee the necessity for it if they were properly awakened to the path they are treading so blindly.

A mandatory Union Card is a possible alternative and the likelihood of such requirement is not entirely remote in the light of the success of vociferous minorities in other walks of life.

The majority of gainfully occupied engineers do not seem to be aware that unionization is around the corner and gaining momentum in certain parts of the country, and that it will take more than their present complacent attitude to stop its spread.

The joint efforts of the engineering societies could do much good for the profession and for the country, by calling attention to this form of creeping paralysis.

—PP—

Now here is a definition of an engineer that comes to us sans the author's name. He calls it "What Are You?"

—PP—

An Engineer is a person who passes as an exacting expert on the basis of being able to turn out with prolific fortitude infinite strings of incomprehensible formulae calculated with micromatic precision from vague assumptions which are based on debatable figures taken from inconclusive experiments carried out with instruments of problematical accuracy by persons of doubtful reliability and questionable mentality for the avowed purpose of annoying and confounding a hopeless chimerical group of fanatics referred to all too frequently as Engineers.

New York State Society of Professional Engineers—Annual Meeting. May 6-8. Hotel Commodore, New York, New York.

Pennsylvania Society of Professional Engineers—Annual Meeting. May 7, 8. Bedford Springs Hotel, Bedford, Pa.

New Jersey Society of Professional Engineers—Annual Meeting. May 7, 8. Hotel Ambassador, Atlantic City, New Jersey.

Maryland Society of Professional Engineers—Annual Meeting. May 11. Park Plaza Hotel, Baltimore, Md.

District of Columbia Society of Professional Engineers — Annual Meeting. May 24. Continental Hotel, Washington, D. C.

California Society of Professional Engineers—Annual Meeting. May 27-29. Mark Hopkins Hotel, San Francisco, California.

National Society of Professional Engineers — Annual Meeting. June 9-12. Schroeder Hotel, Milwaukee, Wisconsin.

Georgia Society of Professional Engineers—Annual Summer Outing, June 18, 19. Ralston Hotel, Columbus, Georgia.

The AE Interviews General Motors Head Next Month!

With stiffened competition, GM is turning more and more to engineers and research. Get the complete picture in the June issue when the AE interviews Harlow H. Curtice, GM President.

Always Read the AE—the Only Magazine for PEs.

In these days of massive explosions .thermonuclear and otherwise, (see page 21), one would do well to heed some of the words of the man who more or less started it all. We close this month, then, with a timely quotation from Dr. Albert Einstein.

—PP—

It is not enough to teach man a specialty. Through it he may become a kind of useful machine, but not a harmoniously developed personality. It is essential that the student acquire an understanding of and a lively feeling for values. He must acquire a vivid sense of the beautiful and of the normally good. Otherwise he—with his specialized knowledge—more closely resembles a well-trained dog than a harmoniously developed person. He must understand the motives of human beings, their illusions, their frailties and their sufferings in order to acquire a proper relationship to individual fellow men and to the community.

N.S.P.E. Believes

A TITLE IS IMPORTANT

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

THE engineering meeting is rare indeed which does not at some point in the discussion decry the indiscriminate use of the word "engineer" in our modern vocabulary. As the nation has become more and more aware of the important role engineers are playing not only in the defense of our country but in the advancement of our standard of living, many who have a product or a service to which they wish to give additional prestige have endeavored in some way to associate it with the term "engineer." Each reader of the AMERICAN ENGINEER can call to mind some absurd connotation such as the cafeteria which advertised as "Engineers of the Palate," or the butcher whose sign carried the notation "Sausage Engineer," as illustrations.

Those in the engineering profession wince as these illustrations are pointed out. Unfortunately, usage over long periods of time in many instances has associated the word "engineer" with the operators of engines rather than with professional qualifications.

It is not to be assumed, however, that a considerable improvement cannot be made by concerted effort on the part of professional engineers and an understanding of those who have values to be gained by the appropriate nomenclature. While it is true that it is difficult to eliminate all use of the word "engineer" by those not professionally qualified, it is significant to note that all of our registration laws make it unlawful to infer the possession of professional qualifications, and in many to use the term *PROFESSIONAL ENGINEER* unless so qualified. Thus, NSPE believes that the efforts of the profession could best be devoted toward the assurance that the use of the term "professional engineer" is only associated with those with professional qualifications. Of course, this presumes because of the laws that the individual has satisfactorily met the requirements of the state law and has taken the necessary steps to become legally registered.

Over a period of years, NSPE has made a number of suggestions and has endeavored to implement them through its publications, its State Societies and its Chapters, toward associating professional engineering with certain types of work and individuals of high qualification. One of these items which has been widely adopted is the use of the initials "P. E." following the names of registered engineers. It is encouraging to note in correspondence, in publications, in some of our college catalogues, and in other media, a wider and wider use of this terminology.

One of the most vexing problems with which local Chapters of NSPE, and to some degree our State Societies, have been faced has been the listings under engineering titles in the yellow sections of our telephone directories. The key to the solution of this problem is to secure the cooperation of those in charge of the preparation of these classified directories, both the advertising people and the telephone company officials. While the directories followed a general pattern throughout the country, the actual listings have been determined to a large degree by local officials. It was imperative that the engineering profession endeavor to standardize a listing which could be suggested to the telephone company for uniformity throughout the country. Such a listing will better serve the public by presenting a clearer picture of the qualifications of individuals so listed, but more particularly will permit a distinction between those who are able to offer the public professional engineering services as against those who have associated the word "engineer" with other miscellaneous services. It is believed that this additional service to the public is a fundamental objective of those preparing the classified directory. With the adoption of the recommendations of NSPE's Ethical Practices Committtee at Albuquerque, the State Societies and local Chapters now have a pattern with which they can endeavor to seek the cooperation of local telephone officials in resolving this perplexing problem.

Another field which can do much to improve the general acceptance of professional qualifications for engineering is that of job titles. More and more, industrial organizations are recognizing the desirability of limiting the title of "engineer" to the jobs requiring professional abilities. Unfortunately, instances continue to come to the attention of engineering groups where industry endeavors to add prestige to less responsible jobs by giving them engineering titles. This, however, is short-sighted for while it may serve to improve the morale of these employees it has an adverse effect on the personnel of more importance to the company; namely, the qualified professional engineers. NSPE believes that in revising and re-evaluating jobs held by professional engineers, recognition through appropriate job titles including an engineering designation will do much to create an atmosphere in which this important technological brain-power may be more productive. —*End.*

An *American Engineer* SPECIAL REPORT

Re: Tax Savings in Prospect for Engineering and Technical Consulting Firms

Prepared by: Antonio Rosas Sarabia, Attorney at Law and Chemical Engineer, Partner—Baker, McKenzie, Hightower & Brainerd—Chicago

● As the current issue of the AMERICAN ENGINEER goes to press, the Senate Finance Committee is about to take action on the House-approved Internal Revenue Code of 1954 (H. R. 8300). Unless drastic changes are made in Sections 923 and 37 of the Code, either by the Committee or, later, by the joint conference of the House and Senate Committees or on the floor of the Senate or House (and this seems most unlikely), when finally approved by both Houses of Congress, for the first time in the history of United States Federal Income Tax legislation, American engineering and consulting firms will be allowed to save 14 per cent of their net income on U. S. taxes on income earned in foreign countries. For taxpaying corporations this is a revolutionary step.

The pertinent portions of Section 923 of the proposed Code relating to taxation of income earned from foreign sources by the performance of engineering or technical services are printed with this report, as is Section 37 which defines the credit given under Section 923.

Aside from the legal language, what will these new sections mean? What will they mean to a firm of architects, consulting engineers, chemical engineers, a construction firm, or an industrial management firm? How will these new sections enable an engineering or consulting firm to work more profitably than before? What will an engineering or consulting firm be able to do now that it could not do before? Let us take these questions separately.

How will Sections 923 and 37 give some advantage to an engineering firm?—These sections will mean an exemption from U. S. taxes for 14 per cent of net income. If you build a dam, construct a bridge, build a dock, or install an irrigation system in a foreign country, your income will qualify for these exemptions. You will have saved money by helping to carry out the Congressional policy of promoting a private Point Four Program rather than the heretofore publicly financed Point Four Program. To put it simply, you will do work, you will be paid and you will be permitted to keep a larger share of your fee after taxes than if you had done the same work here at home. You are being given what lawyers call a "tax incentive."

What will an engineering or a technical consulting firm be able to do that it could not do before? —We have already seen the tax savings made possible because of the Administration's wish to promote a private Point Four. In addition, an engineering or consulting firm will be able to carry on work here at home, in Europe, in South America, in Asia, and in Africa, utilizing the same corporate organization. The need to resort to the formation of separate subsidiaries, foreign or domestic, because of the legal necessity to separate qualifying income, will be eliminated.

Many U. S. firms have not entered foreign activities simply because they refuse to be forced by legal technicalities to organize subsidiaries. For the first time American corporations will be permitted to earn income from foreign sources without being forced to organize separate subsidiaries and without being at a disadvantage, cost- and tax-wise, with foreign competitors. Without subsidiaries and without having an association with foreign operators, either through joint foreign subsidiaries or simple associations in joint ventures, an American engineering or technical consulting firm will be able to carry on its business throughout all parts of the world. It can perform engineering or consulting services and, by the simple expedient of keeping track of its income in good accounting fashion, achieve savings from U. S. Income Taxes on all of its income earned abroad. At the same time, it can direct a construction job in Burma, perform an engineering consultation in France, and furnish industrial management in Brazil. All of this income will receive preferential treatment.

More and more we see American manufacturers establishing branches, organizing subsidiaries, and generally carrying on manufacturing or assembling operations in foreign countries. It is only natural that

(Please turn the page)

such companies prefer to deal with American engineering firms of known reputation. These new sections of the Code will make this possible.

There are also included provisions which will make possible tax savings from branch operations and dividends from foreign subsidiaries. American manufacturers seek American engineering firms to build their warehouses, to construct their roads, and to do their planning and surveying for all their engineering and consultation work. Also, if an engineering or technical consultation firm has a client, it will be able to perform services for that client, wherever needed, at home or abroad with the added knowledge that the income from foreign sources will be entitled to this saving.

Excerpt from House Ways and Means Committee Report

"Sec. 923. BUSINESS INCOME FROM FOREIGN SOURCES.

"Section 923 is a new statutory provision, which together with section 37, both added by your committee, allow certain domestic corporations a credit against United States tax of 14 per cent of the following classes of taxable income derived from sources within any foreign country, as determined under the source rules provided in part I:

" . . . (2) compensation for the rendition of technical, engineering, scientific, or like serivces . . .

"The income in class (2) is intended to include income from technical services pertaining to mechanics, engineering, and science, generally rendered pursuant to contract, such as those of a professional engineer, geologist, or chemist, as distinguished from services pertaining to liberal arts or sports. It would thus include the income derived from such services as the design or construction of projects, such as roads, bridges, railroads, harbors, docks, irrigation systems, water-supply systems, and power systems. Rentals or royalties from patents, copyrights, and similar property are not deemed compensation for services rendered. The credit may be allowed with respect to income arising from such services, even though the domestic corporation rendering the services is not otherwise associated with the other contracting party. Since the gross fees resulting from such services constitute gross income, the credit will be determined by reference only to the taxable income, computed after deductions allocable to such gross income."

As a corollary, the employees of the firm who go to Iran or to Turkey to perform these services for their company will also be eligible for tax savings on their own incomes if they comply with Section 911, with respect to residence or location in a foreign country for a sufficient length of time. An individual U. S. citizen, by complying with these requirements, pays no U. S. tax on the income he has earned while working in foreign countries.

From H. R. 8300

"SEC. 923. BUSINESS INCOME FROM FOREIGN SOURCES.

"(a) ALLOWANCE OF CREDIT.—In the case of a domestic corporation . . . there shall be allowed a credit as provided in section 37 with respect to taxable income derived from sources within any foreign country . . .

"(2) as compensation for the rendition of technical, engineering, scientific, or like services . . . "

"SEC. 37. CREDIT WITH RESPECT TO BUSINESS INCOME FROM FOREIGN SOURCES.

"(a) In General.—In the case of a corporation, there shall be allowed against the tax imposed by this chapter . . . for the taxable year a credit equal to 14 per cent of the amount of the taxable income for the taxable year to which section 923 applies.

"(b) Limitation on Amount of Credit.—The credit allowed by subsection (a) shall not exceed 14 per cent of the taxable income for the taxable year."

The tax credit for foreign taxes paid should also be mentioned (Sections 901-905). These foreign tax credits are to be applicable after deduction of the 14 per cent deduction discussed here.

We Americans are at the forefront of practical applied engineering throughout the world. If these new sections of the proposed Internal Revenue Code finally become law and meet with the success which is expected, not only will they continue to be in effect but they will also serve as the catalyst for an expanding program of tax legislation which will enable American companies to render services abroad and to make foreign investments on a profitable basis.

---NEW PROCESSES---

Oil Spray For Air Pollution Control

A new process using oil spray to further improve the control of airborne wastes at an industrial plant has been successfully achieved by cooperative action of the Disco Co., a division of Pittsburgh Consolidated Coal Co. and the Gulf Oil Corporation's laboratories. The Gulf Oil laboratories were called in for consultation after the Disco laboratories and its plant management recommended the additional use of oil spray, and cooperative experiments were begun in October 1953.

In the process, crushed Disco, called "fines," recovered from screening of the finished product is mixed with crushed coal, heated in roasters and kilns for low temperature carbonization; and then reduced to maximum six inch diameter by crushing. Mechanical measures to prevent dust emission are installed at a number of these points. In one of the most difficult phases, satisfactory control of dust in the preheating ovens where temperatures are brought up to 600° F., cyclonic dust collectors are used.

A series of tests were run at the plant using a special oil. It was disseminated through a Gulf-developed nozzle designed to produce an unusually fine spray. Results proved decisive. Where the oil hit the mixing point of the Disco "fines" and crushed coal only a white vapor was given off. When the sprayed raw material was fed to the roasters, the only resulting discharges from the stacks were thin white plumes. The oil apparently functions by coating the powdered fines and coal so that all dust is held on the surface and carbonized with the product, the Disco Co. reports. A certain amount of product is saved in the process which reduces the cost of the treatment.

In addition, a further reduction in exposure of bearings, conveyors and belts to dust abrasion appears likely to assure considerably longer life to plant equipment and to generally reduce maintenance costs.

A Gulf Laboratories spokesman said, "The excellent results realized makes us believe that oil spray offers greater possibilities than ever suspected in industrial air pollution control. Undoubtedly numerous other operations, like Disco, will also achieve substantially improved results by the use of oil in conjunction with mechanical equipment. Still others may find that oil solves their problem without any other installations."

Light Steel Construction

The pre-stressed "J & L Junior Channel Rigid Bents" is a new box-shaped steel girder formed by welding together two sections of 10", 6½ lb. Jones & Laughlin hot-rolled channel. It is said to provide a strong framework with a minimum of weight, erection time and expense.

The idea was developed for the erection of a school building by W. E. Freeman & Associates, Greenville, S. C., architects. The 30 bents necessary for the first section of the main building were formed in two sections and field-connected by welding on the ground before erection. Columns were mitered to the 72-ft. beams and the six-foot, tapered overhang beams were butted on. Interior pipe columns were welded in place. The secret to the method's success was the pre-stressing. Each column was spread three-fourths of an inch at the bottom when it was welded to the beam. Therefore, when each bent was hoisted for erection by means of two cables, the bent's own weight brought the outside columns back to perpendicular, fitting anchor bolts exactly (only one man was needed at each anchor point) and at the same time a camber of ⅝" per 30' span was obtained by resulting tension.

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book looks

The Book: **Thorstein Veblen: A Critical Interpretation**

The Author: **David Riesman**

The Publisher: **Charles Scribners, Sons**

Reviewing the Book: **Former NSPE President, Sidney L. Stolte, P. E., Partner, the consulting firm of Bettenburg, Townsend and Stolte.**

THE request from Ken Trombley, Editor of the American Engineer, that I review the subject book as recently published by Twentieth Century Library provoked my curiosity as to why this particular book should be of interest to him, the engineering profession and me personally.

A quick scanning through the outline and pages of the book gave no evident clue. Then followed a forced but spasmodic reading as time permitted. Frankly, it was terrible first reading because references were unclear and the author left an impression of being overly drunk with his own inventory of words. It was actually refreshing to get to the simple or ordinary language of the quotes. Part of the above indictment must be attributed to my not having had a previous exposure to the subject or references.

As I read along, I was constantly asking myself, why am I reading this author's impression of another's life work and when the latter is a "mind" popularly classified as an economist, but a thinker of fundamental quality and candor.

Then gradually a reason pieced itself together. Thorstein Veblen was of Norwegian stock, not unfamiliar to us in Minnesota. He was born on a Wisconsin farm in 1857, obtained his B.A. at Carleton College in Northfield, Minnesota, in 1880 and did his most effective study and writing around the turn of the century.

The book is an analysis of Veblen's philosophies and alludes to his life as such details bear upon and help to explain his thoughts.

The first reading through of the book made me admit that I did not really get hold of the subject matter until toward the latter pages and only upon rereading did the first pages begin to unfold in a clearer pattern. The glib references in the beginning to passages in the end or not in the book at all made it necessary that one almost first have a photographic view of the whole book before the parts would begin to make any coherent impressions.

I am now trying to find an early opportunity to read the life of Veblen and some of his original works in order to get a better insight into this controversial character's experiences and mental processes.

Now for a quick review of my reading and then possibly some personal reactions.

It is soon evident that Veblen is characterized as measuring all thought and human actions as being worthwhile and basic if they promote or typify what he considers three natural instincts: workmanship, idle curiosity, and the parental bent.

Veblen has classified society into the producers and the parasites and he considers the worker, scientist and engineer in the former and the businessman, banker, politician, lawyer, and salesman in the latter. He has a consuming antipathy for vested interests and absentee owners. The last mentioned are actually depicted as obstructors to full production.

He saw the hard-boiled, mechanically-adept engineers as an elite that would take over the country and run it as a no-nonsense industrial republic. Veblen placed his faith for revolution in engineers and technicians and taught "The Social Function of the Engineer." Apparently he thought in terms of "A Practical Soviet of Technicians." In "The Engineers and the Price System" he describes the engineers as endowed with something more than an even share of the sense of workmanship. However, Veblen, in speaking of engineers, included both engineers proper and skilled workers.

Veblen seemed to have a fetish to be a nonconformist. He was anti-controls of any sort, anti-social and yet interesting to women. Many probably classified him as queer but on strict analysis a fundamentalist who rallied Veblenian groups and followers around him. However, his retiring nature always kept him apart and, except in some of his writings, a non-affirmative personality. As the author quite aptly states in the preface, the reading of the book is a "search for the personal flavor of a man who, more perhaps than most of us, aimed to be misunderstood, to elude friends and foes alike."

Veblen and Mark Twain are linked in the author's mind as men whose irony at once expressed and concealed a raging bitterness against all in the "Gilded Cage." Both men, as they aged, were more willing to reveal their rancor. Both were instinctively on the side of the downtrodden. Both were freethinkers who kept "hoping the better man, the matter-of-fact man with the slide-rule, will win in the end." They were against corporations—against all vested interests and for the common man.

According to the author, "Ford, indeed, may be seen as the archtype of the Veblenian engineer who wages relentless war on behalf of industry against business, conspicuous consumption and leisure class values generally."

It seems evident that, although Veblen died insolvent in 1929, he did hand down to us the power of his ideas and his personality.

Some personal comments now in summation. Both Veblen and the author seem unaware of the person we now describe as a "professional engineer." They are constantly referring to the engineer in terms and meaning the technician, the master-workman or the symbol of the highest in "workmanship." They classify the engineer as the "hope" in overthrowing the financier and management, and in many ways appear the reference source for currently misunderstood relations and performance of the engineer and management.

The professional engineer of today who is not only a builder of structures, machines and manufacturing processes (as described by them), but is also (and more importantly) the builder and manager of men is undiscoverable in their descriptions. They did not realize that technicians are quite different from professional engineers wherein the former is oftentimes a part of the labor force but the latter is definitely a part of management; that the professional engineer is conscious of his responsibility to society that the service he renders be of the highest order; that he is guided by a code of ethics; that he is concerned with the impact his services or products will have on society generally; and that he is assuming his responsibility on governing and policy bodies to effect the most orderly and sensible handling of the engineering profession's contributions to society.

(A biography of Mr. Stolte appears on the opposite page.)

Bureau Of Standards Man Speaks In Baltimore

Dr. A. T. McPherson, associate director of the National Bureau of Standards, was the guest speaker at the April 13th dinner meeting of the Maryland Society of Professional Engineers. The meeting was held at the Park Plaza Hotel in Baltimore, and Dr. McPherson's lecture was entitled *How the National Bureau of Standards Helps the Engineer.*

The speaker, who holds a Ph.D. in Chemistry from the University of Chicago, has been a member of the Bureau's staff since 1918 and is well-known as an engineer-author of numerous technical papers.

Drexel Institute Head Addresses P.E. Meeting

Dr. James Creese, president of the Drexel Institute of Technology, was the guest speaker at the April meeting of the Philadelphia Chapter of the Pennsylvania Society. The subject of Dr. Creese's address was *Expected Developments in Engineering Education.*

Meet the Reviewer . . .

Sidney L. Stolte, a National Society of Professional Engineers' past president, was born in Minnesota in 1905. After completing high school, he attended the University of Minnesota, graduating in 1927, with a B.S. in Architectural Engineering. While at the University he became a member of Tau Beta Pi, Tau Sigma Delta, Pi Epsilon Delta, and Alpha Rho Chi.

Mr. Stolte

Following graduation, he was employed as an architectural engineer in several Minneapolis offices, then as state construction engineer for the State Emergency Relief Administration; state director of Division of Operations, Works Project Administration; and state administrator, of the same agency.

Mr. Stolte joined his present firm, Bettenburg, Townsend and Stolte, architects and engineers, in 1943, later becoming a partner in the firm. He is a Registered Professional Architectural Engineer, and his varied work career includes such jobs as designing of the first reinforced concrete skyscraper building; architectural and engineering design work for many bank buildings throughout the Northwest; structural engineer on the Minneapolis Post Office project; and having charge of detailing all the granite shop drawings for the thirty-one story Federal Courts Building in New York City.

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N.S.P.E. PUBLICATIONS NOW AVAILABLE

The NSPE publications, as listed, are available upon order. Please use the form below, circling the numbers which correspond to the particular publications. Information on bulk orders of these items may be secured by writing to the Society. Remittance must accompany order.

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   Suitable for Framing ..... $ .50 ea.

*2. How to Attract and Hold Engineering Talent
   Executive Research Survey No. 3, 60 p. ..... $2.00 ea.

*3. How to Improve Engineering-Management Communications
   Executive Research Survey No. 1, 46 p. ..... $2.00 ea.

*4. How to Improve the Utilization of Engineering Manpower
   Executive Research Survey No. 2, 55 p. ..... $2.00 ea.

5. Income & Salary Survey
   1952 statistics covering NSPE members ..... $ .50 ea.
   Non-Members $1.00 ea.

*Published by the Professional Engineers Conference Board for Industry in cooperation with the National Society of Professional Engineers. Use coupon below but make checks payable to the Board.

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      Bernard Baruch
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   Statement of policy by NSPE
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    b. The Professional Development of Engineers and Scientists in Industry
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       Karl B. McEachron, P.E.
    d. NSPE's Development of Professional Objectives—
       Perry Ford, P.E.
20. Recommended Procedure for Negotiating Engineering Contracts
    Policy statement by NSPE
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Meeting

(*Continued from page* 13)

tive Director's Report; Taft-Hartley Legislation; Social Security Coverage; Retirement Tax Status for Self-Employed; Advance Planning of Public Works; Hoover Commission Studies; and other items of national legislation and government liaison.

The usual regional luncheons, with NSPE vice presidents presiding, will be held Thursday, June 10. The specific places at which these luncheons will take place will be indicated in the program which you will receive upon registration. After lunch the professional meeting will be continued.

Topics to be discussed at this session will be: Architect-Engineer Relations; Engineer in Industry Relations; Work with Registration Boards; Desirable Changes in Registration Laws; Enforcement Procedures; Reciprocal Registration; Public Relations Activities; Engineers' Week Program and Plans; Executive Research Surveys; Chapter Public Relations Kit; Young Engineers Activities (Counseling, Attracting Membership, Special Programs, Stimulation); Board of Ethical Review; Telephone Listings; and Engineers' Creed.

On Friday morning, June 11, another professional meeting will be held. Subjects to be discussed are: Membership Development; Expansion of Chapter Activities; Ladies Auxiliaries; Engineering Manpower; Engineers in the Reserve Components; Engineers in Civil Defense; Salary Considerations; and Resolutions.

At the luncheon on Friday the Wisconsin Registration Board of Architects and Professional Engineers will be honored. Mr. Pierce G. Ellis, WSPE President, will preside. The main address will be given by Dr. Frank D. Slutz.

On Friday afternoon at 2 p.m., meetings of the WSPE Board of Directors and of the Professional Engineers Conference Board for Industry will be held.

Saturday morning, June 12, will be devoted to a panel discussion on "Evaluation of Engineering Education." Saturday's luncheon will be presided over by Mr. Edwin W. Seeger, NSPE Vice-President. The main speaker will be *an outstanding analyst of the nation's economy,* who will outline the importance of engineering to the nation.

NSPE Executive Director Paul H. Robbins, left, discusses meeting plans with Wisconsin SPE leaders. Popular Milwaukee engineer and NSPE Vice President, Edwin W. Seeger, is shown standing, second from right.

The Annual Membership Meeting of the Society will be held on Saturday afternoon. On Saturday evening at the Elks Club (a short distance from the headquarters hotel), following a cocktail party which will begin at 6 p.m., the Annual Banquet will take place. Mr. Forrest, NSPE President, will preside. The speaker of the evening will be Mr. Harry A. Winne, former General Electric Vice President and recipient of the National Society of Professional Engineers' 1954 Award. Following the banquet a dance will climax the four days' activities. Formal dress is optional.

Other social activities include a Smorgasbord on Thursday evening, followed by a general get-to-gether with entertainment, dancing and visiting. Friday evening may be devoted to the Braves' game, to brewery visits, or to a "free evening." Saturday evening will see the cocktail party, Annual Banquet, and dance at the Elks Club.

Speaking of social events, a wonderful program has been planned for the ladies, too. On their schedule is dancing with their husbands at the Thursday night get-together, interesting tours, coffee hours, luncheons in delightful surroundings, a breakfast on genuine Wedgwood china, as well as dinners and the Annual Banquet. —***End.***

Yes!

(*Continued from page* 16)

ing at least the rank of vice president.

3) **It extends the executive officer's responsibilities to all his associates and subordinates in responsible charge of engineering work by insisting that they be licensed.**
4) **It prescribes that all professional engineering work done by the corporation be carried out by licensed engineers.**
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It is significant that the responsibility for technical performance under the Carlino-Milmoe Bill is solely the responsibility of the individual. It rests upon the integrity and ethical standards of the professional engineer. If he has attained the true stature of a professional man, he will not be swayed by non-technical direction into abrogating his ultimate responsibility to the public at large. I have no fear in regard to the engineer's moral fiber nor of his ability to accept the professional challenge. After nearly twenty-five years of corporate experience, neither do I detect any lack of character or sense of responsibility among the officers and directors of our corporations.

As long as the professional engineer realizes and accepts his public responsibility, there is a place for all types of engineering practice—individual, partnership, or corporate. As long as he does not, there is a place for none. The problem is as simple and yet as rigid as that. Therefore, let us adjust our thinking to the tempo of modern times and support the corporate practice of engineering—***End.***

With Our Members . . .

Seventy-Sixth Convention

Ohio P.E.'s Hear Forrest, Sturgis; Install New Officers in Akron

The Mayflower Hotel in Akron, Ohio, was the scene of the recent 76th annual meeting of the Ohio Society of Professional Engineers.

Two nationally-known engineers—NSPE President T. Carr Forrest, Jr., and Maj. Gen. Samuel D. Sturgis, Jr., chief of the U.S. Army Corps of Engineers—delivered major addresses at the meeting. Mr. Forrest's speech was entitled *NSPE—A Vehicle for Progress,* while General Sturgis spoke on *Ohio's Two Seaways.*

Other prominent personalities addressing the engineers included: Dr. Warren A. Guthrie, Western Reserve University; Roy Lee Brooks, vice president, Pist-N-Lube, Inc., Akron; and Charles E. Slusser, commissioner of public housing and former mayor of Akron. In addition, Akron District Society President E. L. Hineline and Mayor Leo Berg both delivered welcoming speeches.

Highlights of the meeting included the presentation of the student trophy to Ben Bader, representing the Ohio U student chapter, the award of a citation to NSPE's first president, D. B. Steinman, and the installation of new officers.

Outgoing OSPE President Charles P. Smith turned his gavel over to Paul A. Harlamert of Cleveland. Other newly-installed officers include: Wallace T. Adams, C. R. Hanes, and Lawrence A. Archer—vice presidents; Stephen W. Kuhner, secretary; and Alfred H. Samborn, treasurer.

John E. Kallgren served as general chairman of the convention, and Mrs. S. Dubetz headed the committee that arranged special entertainment for the ladies.

La Crosse Engineers Pass Fluoridation Resolution

Members of the Western Chapter, Wisconsin SPE, meeting recently with the La Crosse Committee of the American Society of Mechanical Engineers joined in passing a resolution, already supported by the medical, dental, and legal professional groups, approving fluoridation of the city's water supply.

After the business of the evening had been concluded, Dr. Francis Tatnall, director of testing research for Baldwin - Lima - Hamilton, addressed the engineers and their guests on the topic, *Making Things Stronger by Making Them Lighter.*

Another recent report from the Western Chapter gives news of the appointment of John R. Managan as secretary-treasurer to fill the vacancy created by the transfer of Fred R. Hayden to Madison, where he has been named director of the newly reorganized Secondary Roads Department of the State Highway Commission.

It has also been announced that the Chapter has given a subscription to the *American Engineer* as a gift to the La Crosse Public Library.

Florida Annual Meeting

The Hotel Thomas in Gainesville was the scene of the recent annual meeting of the Florida Society of Professional Engineers. A full agenda of business matters was transacted during the day-long meeting, which followed an evening session of the board of directors.

Of great interest was the discussion of a possible merger of the Florida SPE with the Florida Engineering Society. No official action was taken, but the engineers at the meeting expressed themselves in favor of such a consolidation. The matter will also be discussed at the Florida Engineering Society annual meeting in Miami Beach on May 6th.

During the meeting, John E. Kiker, Jr., outgoing president, installed the following new officers: John F. Reynolds, president; Herbert C. Gee, vice president; Thomas L. Bransford, secretary-treasurer, and E. A. Anderson, national director.

Kansas Notes

Dr. John B. Southerland, a new member of the Topeka SPE who has recently been appointed director of the Kansas Industrial Development Commission, addressed the Topeka and Eastern Chapter P.E.'s on *The Engineer and the Growth of the Midwest* at a joint meeting of the two chapters on April 16th. Dr. Southerland is a resident of Burlingame where he heads his own engineering organization.

The meeting was held in the Student Union Building of the University of Kansas in Lawrence, and prior to the banquet, those who attended viewed the Engineers' Exposition in Marvin Hall.

William Mains is president of the Topeka Chapter, while Malcolm Steele heads the Eastern Chapter.

OHIO SCENES—Below left: During the Akron meeting, new OSPE officers talk over the program for the coming year. Seated, l. to r., are: W. T. Adams, vice president; P. A. Harlamert, president; L. H. Archer, vice president; and C. R. Hanes, vice president. Standing are: A. H. Samborn, treasurer, and S. W. Kuhner, secretary. Below right: Prior to the OSPE banquet, NSPE President and Mrs. T. Carr Forrest, Jr., get together with Mrs. D. B. Steinman and Dr. Steinman. A highlight of the Ohio convention was the presentation of an award to Dr. Steinman, world-renowned bridge builder.

South Piedmont Groups Study Building Plans

The members of the Ladies' Auxiliary to the South Piedmont Chapter of the Professional Engineers of North Carolina have initiated a proposal that a Professional Engineers' Building be erected in Charlotte, and the suggestion is now under joint consideration by the chapter and the ladies' group.

Mrs. George S. Rawlins, president of the auxiliary, and John C. Bolen, chapter president, will name a joint building committee to investigate possible sites, financing plans, and other factors.

Tentative plans, which were drawn up for the auxiliary, call for a building that would feature inside and outside parking facilities, provide ground floor space for a restaurant, a branch bank, and shops, offer banquet and meeting facilities, and furnish office space for lease or rent to engineers and other qualified professional groups and business firms.

Sabine Chapter Member Honored by AIEE

Albert F. Briggs, a member of the Sabine Chapter of the Texas SPE, was honored recently by being made a fellow of the American Institute of Electrical Engineers. Mr. Briggs, who is assistant electrical director of the Sun Oil Company in Beaumont, was cited for "his contributions to the application of electric power and automatic controls in the oil industry . . ."

Presentation of the AIEE certificate was made by the Institute's national president, Elgin B. Robertson, who is also a member of the Texas SPE and NSPE.

Illinois Report

C. W. Klassen Installed as President During 69th Annual Meeting of ISPE

The 69th annual meeting of the Illinois SPE, held late in March at the Broadview Hotel in East St. Louis, featured a varied professional and social schedule climaxed by the installation of new officers. Outgoing President R. G. Brichler turned the administration of the society over to Clarence W. Klassen, while Dwain M. Wallace succeeded Mr. Klassen in the vice presidential post.

Mayor Alvin G. Fields and O. D. Meyer, president of the East St. Louis Chamber of Commerce, each delivered welcoming addresses to those attending the convention. Other speakers for the event included: Lt. Gen. Robert W. Harper, U.S.A.F.; NSPE President T. Carr Forrest, Jr.; Miss Vera M. Binks, director of the Illinois Department of Registration and Education; and Dr. Curtis L. Wilson, dean of the Missouri School of Mines and Metallurgy.

The members of the St. Clair Chapter, of which A. J. Feickert is president, served as hosts for the meeting. S. C. Casteel served as general convention chairman, and a special program for the ladies was arranged by Mrs. Raymond G. Brichler and Mrs. Arthur J. Feickert.

P.E.'s And Patents Discussed In Ohio

Webster Harpmann, a well-known Ohio patent attorney, was the guest speaker at a recent meeting of the Mahoning Valley Chapter of the OSPE. Mr. Harpmann spoke on the subject, *Rights and Privileges of the Professional Engineer under United States Patent Law.* A question-and-answer period followed Mr. Harpmann's speech.

Civil Defense Lecture In Tulsa

A recent meeting of the Tulsa Chapter, Oklahoma SPE, featured a lecture by Joseph Morris, executive director of Tulsa City-County Civil Defense. Mr. Morris spoke on the subject, *The Role of the Engineer in Civil Defense.*

Pennsylvania Society Plans Annual Meeting

The Bedford Springs Hotel, Bedford, Pa., in the Allegheny Mountains will be the scene of the nineteenth annual meeting of the Pennsylvania SPE on May 7 and 8.

A varied professional and social program is being planned under the direction of the Johnstown Chapter, whose members are acting as hosts.

PSPE President Donald C. Peters will preside at the professional and business sessions, and the list of guest speakers will include Dr. Alan Stockdale of the National Manufacturers Association, NSPE President T. Carr Forrest, Jr., and Paul H. Robbins, NSPE's executive director.

Also, Miss Virginia Colvin of Bedford will address a special luncheon for the ladies.

. . . more news on page 35

ENGINEERS HONORED—Below left: Leo K. McKee, Monmouth County, N. J., engineer, receives a special service certificate awarded by the Monmouth-Ocean SPE. L. to r. are: Leonard G. Grasser, Monmouth-Ocean vice president; Mr. ning, dean of engineering, Columbia University, and Samuel nneth H. Fox, vice president. Below right: Dr. John R. Dun-McKee; John Ernst, chairman, Awards Committee; and Ke J. Gates of the Milwaukee Chapter, admire the "Engineer of the Year" citation held by NSPE Vice President E. W. Seeger, who received the honor from the Engineering Society of Milwaukee.

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T. Carr Forrest, Jr. Speaks In Delaware

NSPE President T. Carr Forrest, Jr., was the guest speaker at the April 8th banquet of the Delaware Society of Professional Engineers. The dinner was held in the Ivy Tea Room of the John Wanamaker's store in Wilmington, and the program also featured a fashion show for the ladies.

The special "ladies' night" arrangements were directed by C. I. Smith, Jr., chairman of the program committee, and E. Powell Smith, president of the society, presided at the event.

N. Y. CONVENTION COMMITTEE —Members of the committee planning the New York State SPE Convention, which will be held May 6-8 at the Hotel Commodore, New York City, are pictured in the photo at the right. Seated, l. to r., are A. B. Casulli, Frederick Mardus, Herbert F. Roemmele, Samuel Carr, F. P. Padron, and F. D. Cardwell. Standing are: John E. Lane, B. E. Anderson, James P. Welsh, Nathan Feder, Paul Klepper, G. N. Chaad, Otto Rothman, John W. Heiss, George T. Baer, James A. Brunn, E. M. Lindheimer, and O. T. Sater.

Mayor Robert F. Wagner will address the engineers at the opening luncheon, and a special feature of the convention will be a symposium on "The Professional Engineer in World Activities."

With the Ladies

By MRS. FRANK W. CHAPPELL
Chairman, NSPE Ladies Advisory Committee

The Ladies Auxiliary to the Grand Valley Chapter, Michigan SPE, has presented a Student Merit Award of fifty dollars to John Kuly of Detroit, a senior engineering student at Michigan State College. Mrs. Ira Baccus, Mrs. J. R. Snell, and Mrs. Scott Baker, the president of the auxiliary, served on the award committee.

Directing plans for the special ladies' program for the New York State SPE convention is a committee composed of Mrs. John J. Costa, Mrs. Daniel Gordon, Mrs. Carl M. Gilt, Mrs. C. W. Valentine, Mrs. Henry G. Vermont, Mrs. Paul Klepper, Mrs. Daniel J. O'Connell, Mrs. John H. Knight, Mrs. John B. Walsh, Mrs. Meyer Tannenbaum, Mrs. Ernest F. Fox, Mrs. John E. Lane, Mrs. Samuel S. Aidlin, Mrs. Lucien J. Cavagnet, and Mrs. J. Brunner.

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Death Claims W. D. P. Warren

A distinguished member of NSPE and past president of the Illinois Society, Willis D. P. Warren died April 13 in his home in Decatur, Ill.

Mr. Warren, who headed the engineering firm of Warren & Van Praag, Inc., from 1918 until his retirement in January, 1952, was widely known as a practicing engineer and as an authority in the field of municipal public works. A graduate of the University of Texas, he was the author of five technical volumes on engineering problems in addition to the philosophical *Mid-Century Appraisal of Civilization.*

During World War I, he served as a first lieutenant in the Corps of Engineers, while during World War II he was an architect-engineer for the War Department.

In addition to NSPE and the ISPE, Mr. Warren was a member of the American Society of Civil Engineers and the American Water Works Association.

Sturgis

(*Continued from page* 12)

I know that I may well be guilty of over-simplification, and that there were many factors and considerations involved which space does not permit me to mention, but there can be no doubt that last time, the engineering profession was handed an opportunity for national leadership and passed it by. The result was what I think is now nationally acknowledged as not the best use of our money nor of our effort which our fast-growing, relatively undeveloped country could ill afford. Therefore, I ask you: What thought is being given now in our profession towards formulating a comprehensive, u s e f u l emergency public works program, should the need for it ever arise?

In the Army, as in civilian industry, our troubles and our achievements stem directly from the quality of our personnel. With this in mind, you may be interested in the job which the Corps of Engineers is doing today and the nature of the resources we have been given with which to accomplish it.

In addition to our normal civil works and permanent military construction and maintenance, for which our regular force of professional officers and civilian employees is fully adequate, both as to quantity and quality, we have heavy troop commitments in Korea, Japan, Germany, and other points around the world, and we also have a military construction program of 6.2 billion dollars involving work in the United States and its possessions, North Africa, the Middle East, and the Arctic regions.

TO carry such a heavy load, our regular strength has had to be greatly implemented from the ranks of reservists, who now constitute 80 to 85 per cent of our current strength. Numerically, the response to our appeal for assistance was reasonably good, though precarious overseas until quite recently, but at present, our Corps is approximately at its authorized strength. But there is more involved than mere numerical strength in manning an organization as large as ours. As in all good organizations, there is the even more important question of quality.

How would you like to operate your engineering firm with only one-quarter of your over-all strength professionally trained or experienced? Yet of the non-regulars we now have on active duty, constituting as I said the far greater part of our strength, only 24 per cent have engineering training or experience. And even that figure is misleadingly high, for 17 per cent of this 24 per cent over-all consists of lieutenants with no previous experience, who are serving their compulsory tour of active duty following graduation from engineering school. Significantly, in the next higher grade of Reserve captains on active duty only 125 out of 2149, or only 5.8 per cent of that group can be considered professionally qualified engineers. But this is the quality of personnel we receive to augment our regular forces in placing up to two billions of dollars of construction each year.

You might wonder why we do not call upon the many competent civilian engineers who are members of the Reserve. Well, we have done so! Last year we wrote to 1300 senior Reserve officers, all of them experienced engineers, asking them to come on active duty with us. We received a total of 89 replies to our query of which 64 were favorable. This is as far as we are permitted to go under present conditions.

For as I have previously mentioned, this is an era of half-war and half-peace. The Corps of Engineers has many of the missions of war and most of the limitations of peace. Although the American people have been most generous in furnishing us with sufficient funds, supplies, and equipment, we must obtain our personnel on a strictly voluntary basis, and in these prosperous times for engineers, when the threat of a hot war no longer appears imminent, competent and experienced engineer volunteers are few and far between.

In spite of this terrific handicap, we are getting our job done. But you must remember that to perform this feat, personnel-wise we are standing on the tips of our toes, straining every muscle to reach our goal. You must never allow the ground to be cut out from under us.

THE lack of qualified personnel is our most serious problem. It is the only point at which we could conceivably fail at present. But as a source of possible failure to our organization, it should be of real concern to the engineering profession first, and failing of relief there, to the Nation as a whole.

The medical services of the Armed Forces have recently gone through similar difficulties. Like engineers, the doctors were prospering in civil life. Like our Corps, the medical services were attracting insufficient volunteers to meet their requirements. The shortage of doctors in uniform reached such serious proportions as to endanger the health of the services and finally was becoming a matter of national concern. At this point, the American Medical Association took vigorous action to provide the Armed Forces with necessary medical care at all times and an unpleasant and dangerous situation was averted for the medical profession and for the Nation.

One of the most pressing problems of our armed services today is to get and keep officers with engineering backgrounds in the top councils and higher command levels. Today we have such personnel in these assignments, but today we still have considerable engineering talent and experience among our senior officers. It is the future that concerns me, and it should concern you too. As the number of our Regular and Reserve officers in the top grades falls off through attrition, who will replace them? We have a small group of Regulars, who will be trained for increasing responsibilities. But the bulk of our officers will come, as it does today, from the Reserve, and I am sure that you will agree with me that in training and experience our Reserve officers on duty today hardly represent a cross-section of the engineering profession. And yet in this age of technology, an engineering approach to military problems is of primary importance to the national defense.

I know that our own profession can do much to alleviate my Corps' personnel problems. I hope that it will; and I invite it to come to our assistance. And so I ask: What help can the Corps of Engineers expect from the profession as a whole towards maintaining and improving the professional quality of military engineers and the high position the Corps deserves within the Army in this day of reliance on technology for national survival?

Every one of us—in or out of uniform—who calls himself an engineer is seriously concerned with uplifting the stature of our profession. But mere exaltation of engineering *per se* is no worthy end in itself. Our professional reputation will depend entirely upon the good works which we accomplish. And if our efforts are to be most effective, we must have engineering leadership. And just as the engineering profession has always led the way in all of mankind's progress towards a better life, so there must certainly exist in the ranks of the profession today those who can lead us on to new heights of achievement.—***End.***

An Engineers' Week Thank You

The *American Engineer* wishes to thank the many State and Chapter officers and Engineers' Week chairmen who have submitted reports and photographs relating to the local observances.

While space limitations do not permit further AE coverage, this material is being carefully studied by the National Engineers' Week Committee as a valuable guide to future planning.

Public Relations

(*Continued from page* 8)

tensified program are the compiling of a graphic public relations kit; an expanded public relations newsletter containing a guided, year-round program of activity suggestions; and regular stories in the AMERICAN ENGINEER devoted to case histories of successful public relations programs on the state and local levels.

Seeger pointed out that the public relations kit will contain a complete set of news release forms covering all phases of local NSPE activities, and a 'how to do it' handbook designed to give the local PR chairman specific facts on how the press, radio, TV, and other mass communication media can be used.

"What we have actually developed in this kit," Seeger explained, "is a boiled down, professional course in public relations. This material should prove invaluable as a stimulant to the growth and promotion of NSPE aims and ideals on the state and local levels."

Seeger emphasized the need for establishing a mailing list of PR chairmen so that each of them could be sent a public relations kit as soon as possible.

As the intensified program gets under way the more successful PR activities on the state and local levels will be described, in case history form, in the AMERICAN ENGINEER.

"We hope that these case histories will be a fertile source of public relations ideas for PR chairmen throughout the NSPE," Seeger added.

In his letter to state and chapter presidents Seeger stressed the importance of every NSPE group's having "a definite and interested individual appointed as public relations committee chairman."

"The success of our intensified program will depend in large measure upon an active and functioning PR chairman in every NSPE community," he stated.

Letters

(*Continued from page* 3)

that 12.3% of the engineers questioned chose engineering for financial reward, 6.3% for social position, and 10% because of family influence. This 28.6% do not exhibit the characteristics of the engineer initially. Again, 28% of our graduates get a degree by the "skin of their teeth," lack engineering abilities, and hence are not liable to be happy in engineering.

Data indicate that 62% of the executives felt engineering training was too narrow. However, on page 56 of the survey it is shown that 39% of the executives were in government, or simply that category called "other." How many of them were interested in engineering? How many were interested in philosophical attitudes or beliefs? Again, how many executives, now divorced from engineering, have forgotten that they are now executives because they were first good engineers?

A few years ago I had occasion to study educational opportunities during 16 years of education, through grade school, high school and college. Included was religious education available on Sundays. College catalogs and public school schedules were available. The results were surprising. Total contact, or instructional hours totalled 11,744, average. Of these 75.24% were general educational contact, 14.15% were religious, and but 10.61% were engineering in nature, even for the average engineering graduate.

Fine, in his writings on education in the *New York Times*, has reported that, in the selective service deferment tests given college students, engineers as a group have made the highest grades. He further reported that when educationists complained that these tests were "loaded" technically, they were asked to signify the questions on the tests that they favored. This was done, and tests were graded on the basis of such questions only. Engineering students *still* had the highest grades!

In spite of facts, which are ignored, an organized attack on engineering education continues. This is either because someone or some powerful group desires the paralysis of our technology or, more likely, because shortcomings of engineering graduates are more apparent than those of others. The engineering graduate embarks upon important endeavor more quickly than others.

Did I write "shortcomings" regarding engineering graduates? I did! They exist, but are not peculiar to engineering graduates. They are the result of the educationist's effects on our public school systems—the "progressive" trend. It is in the public school system—through high school—that correction should be made. A college professor of languages recently told me that today's high school graduates did not possess the knowledge of English exhibited by the eighth grade pupil of 25 years ago. I know, from discussion with students, that their historical education has been more philosophical than factual.

In representing the engineering profession, NSPE should look at the over-all picture before joining criticism of engineering curricula, learn to analyze data, and not to be stampeded by popular propaganda. If you are to be supported by engineers, you, in turn, will have to support them . . .

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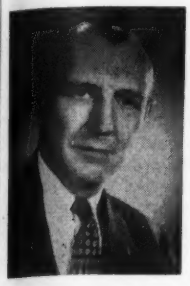
Strictly Business

Personalities . . . DAN E. MORGENROTH has been appointed manager of general construction material sales of OWENS-CORNING FIBERGLAS CORPORATION, Toledo, O. . . . FREDERICK J. MAYO has been elected executive vice president of F. H. MCGRAW & COMPANY, New York engineering and construction firm. . . . C. W. CAMPBELL has been named chief engineer for the South Philadelphia, Pa., Steam Division of the WESTINGHOUSE ELECTRIC CORPORATION. . . . J. ALBERT STRUM is the new manager of the Architectural Engineering Division of the BETTINGER CORPORATION, Waltham, Mass.; and HENRY P. SEYMOUR has been appointed as manager of sales for V-Corr enamel produced by the same firm. . . . GEORGE S. WHEATON, assistant vice president of the California firm, AMERICAN POTASH & CHEMICAL CORPORATION, has been named head of the company's Eston Chemicals Division. . . . S. E. FAIRCLOTH, production coordinator, and R. C. HEACOCK, director of manufacturing and engineering, have been named vice presidents of BARBER-GREENE COMPANY, Aurora, Ill., manufacturers of paving, materials handling, and ditching equipment.



Mr. Morgenroth

The GRAVER WATER CONDITIONING CO., New York, has announced the appointment of E. A. STRAHLENDORFF as chief estimating engineer. The appointment of JAMES J. HANRATTY as district sales engineer for New York and the promotion of A. J. SORIENTE from designer to project engineer in the Cold Process Equipment Section of Graver's Engineering Department were also announced at the same time. . . . M. W. ZOLTON has been named general manager in charge of the manufacturing and engineering facilities of the YORK-GILLESPIE MANUFACTURING CO., Pittsburgh, Pa. . . . R. H. HILLER has joined the Atlanta staff and VERN WINN, the Detroit staff of the BENJAMIN ELECTRIC MANUFACTURING COMPANY, Des Plaines, Ill., producers of industrial and commercial lighting equipment, while A. A. MICHEL has been named to head the firm's Nashville office. . . . EVERETT H. THORNE, New Jersey engineer, has started a small subdivision of GUNNISON HOMES in West Long Branch, N. J.

Mr. Zolton

STANDARD PRESSED STEEL CO., Jenkintown, Pa., has made EDWIN Y. BREADY division manager of the Hallowell Pressed Steel Division. The company has also placed CHARLES A. THOMAS, JR., manager of industrial relations and industrial engineering, in charge of production control, quality control, and estimating and cost analysis, and has promoted JAMES L. MACDOWELL to the position of superintendent of manufacturing, Fastener Division. . . . EDWARD A. LIVINGSTONE, vice president of THE BABCOCK & WILCOX COMPANY, has been elected to the board of directors and put in charge of the Tubular Products Division. . . . HUGH GLEN has been elected president of JOHNSTON PUMP COMPANY, Pasadena, Cal. . . . GEORGE M. PRO has been named a partner in AIR PLACEMENT EQUIPMENT COMPANY, Kansas City, Mo. . . . WARREN DUDLEY is now chief midwest regional field engineer, with headquarters in Detroit, for VIRGINIA METAL PRODUCTS, INC. . . . New vice presidents of ARTHUR D. LITTLE, INC., Cambridge, Mass., are DR. LAWRENCE W. BASS and D. REID WEEDON.

Operational Expansion . . . REVERE CORPORATION OF AMERICA, manufacturer of precision instruments for aviation and industry, has announced the opening of two new plants in Florida and Washington by newly established subsidiaries.—SOUTHEASTERN INSTRUMENT CO. in Fort Lauderdale will design, engineer, and manufacture component parts for aircraft fuel systems, while the REVERE INSTRUMENT CO. in Bellvue, near Seattle, will design and develop hydraulic and pneumatic valves for aircraft and industry applications. . . . The CAMBRIDGE CORPORATION of Cambridge, Mass., an engineering and manufacturing company owned jointly by CARRIER CORPORATION and ARTHUR D. LITTLE, INC., has leased a 40,000 sq. ft. industrial plant in Lowell, Mass., in order to expand its production facilities.

MELLON-STUART COMPANY, Pittsburgh, Pa., has formed a new operating subsidiary, the MELLON-STUART INDUSTRIAL CONSTRUCTION CO., to specialize in engineering and construction in the heavy industrial field. R. L. CLARK is general manager of the new firm. . . . The HUSKY OIL COMPANY has entered the steel warehousing and fabrication business with the acquisition of GATE CITY STEEL WORKS, INC., of Omaha, Neb., and Boise, Idaho, according to an announcement in Cody, Wyo., by Husky President GLENN E. NIELSON. N. RULISON KNOX, a newly-elected director and vice president of HUSKY OIL, has become president of GATE CITY STEEL and will direct its operations from offices in Denver, Colo.

Reorganization and Changes . . . The firm formerly known as COMPRESSED AIR PRODUCTS has been succeeded by THE AIROYAL CO., maintaining offices in Maplewood, N. J., and New York City. . . . In a realignment of its organizational structure, the PENNSYLVANIA SALT MANUFACTURING COMPANY, Philadelphia, plans to establish two new operating divisions, according to President GEORGE B. BEITZEL. The new components, which will function as complete operating units responsible for both manufacture and sale of their products, will be the Industrial Chemicals Division and the Chemical Specialties Division.

Contract Awards . . . TURNER CONSTRUCTION COMPANY has announced that a contract for furnishing and erecting the structural steel for the new Socony-Vacuum building in New York has been awarded to AMERICAN BRIDGE COMPANY, division of U. S. STEEL CORPORATION. . . . The design contract for the new $5,000,000 city hall for Flint, Mich., has been awarded to H. E. BEYSTER & ASSOCIATES, INC., Detroit architects and engineers, by the Flint City Commission. . . . The contract for the construction of a river dock to handle barge shipments of coal to provide power for an atomic energy plant has been awarded to DRAVO CORPORATION, Pittsburgh, by the YANKEETOWN DOCK CORPORATION, Indianapolis, Ind. The facilities will be built along the Ohio River at Yankeetown, Ind., 15 miles east of Evansville. The new power plant to be served by the barges is that of the OHIO VALLEY ELECTRIC COMPANY at Madison, Ind.

What's New

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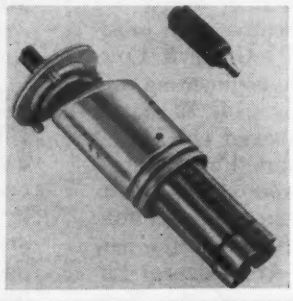
FOUR-WAY VALVE FOR HEAT-PUMP — Item 1



A hermetically-sealed, manually operated four-way reverse flow valve has been developed by the Bridgeport Thermostat Division of Robertshaw-Fulton Controls Company for use in window-type air conditioning units. Installed in the heat pump, the new valve acts to reverse the flow of the refrigerant, causing the appliance to throw off heated air instead of cooled air, or vice-versa. They are of compact construction, measuring approximately 1⅜" by 5¾", including the connecting tubes. The entire valve weighs only 14 ozs.

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KOROSEAL STRIPS FOR PORCELAIN — Item 2

A new Koroseal Caulking strip, developed by The B. F. Goodrich Company now makes it practical to sheath multi-storied buildings with porcelain architectural paneling. The Koroseal strip is a one-piece extrusion composed of a flat tube set at right angles on the center of a narrow, flexible strip. Flanges of the strip are placed behind the back edges of panels and the hollow, tube-like portion of the strip extends between the panels. When the panels are installed, the joint so formed compresses into a weather-tight seal.

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VERNIER BEVEL PROTRACTOR — Item 3

A Universal Vernier Bevel Protractor with "Lustro-Chrome" dull chrome finish over the entire measuring dial is announced by the George Scherr Company. Finish eliminates glare, makes measurements easy to read, and protects surface from rust and corrosion. Sturdy thickness of .100" prevents deflections, assures accuracy. Measures any angle to 5 minutes. Equipped with 6" blade, additional 12" blade can be furnished, also a stand with precision lapped base.

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NEW ADHESIVES BOND MYLAR TO PAPER — Item 4

Two new adhesives, (one featuring unusual sterilization resistance and the other offering long-term high-temperature resistance combined with high dielectric strength), both specifically developed for bonding duPont's new Mylar polyester film, have been announced by Rubber & Asbestos Corp.

Offering high dielectric strength, Bondmaster L272 has been specifically formulated for the manufacture of laminations used in slot insulations, phase insulation, motors, core and layer insulations in transformers, etc. A second, clear, formulation Bondmaster L440, has been developed for the bonding of Mylar to paper for sterilization resistant applications.

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BLASTING MACHINE GENERATES CURRENT — Item 5

Maximum safety and reliable performance for the user of industrial explosives are provided by a new portable blasting machine of the condenser discharge type which is generator operated. It is believed to be the first such machine utilizing a high voltage DC generator directly connected to charge the condensers. Will fire up to 50 caps in parallel and up to 1,200 in single shot. Developed by Fidelity Instrument Corp. and Atlas Powder Co.

This column describes new products of general interest to professional engineers. For further information, fill in the coupon provided and mail to the AMERICAN ENGINEER.

QUICK SOLDERING — *Item 6*

The Stark Manufacturing Company has announced its Model 101 SOLDER-QUIK, designed for light, fast soldering on small work. Especially recommended for radio and television assembly and repair, typewriter service, electric motor repair and similar operations involving small metal parts. Operates from regular 110 volt AC line through a step-down transformer. Six heat ranges are available through a simple plug-in feature.

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FIBERGLAS ACOUSTICAL FORM BOARD — *Item 7*

A new product, incombustible Fiberglas Acoustical Form Board has been announced by Owens-Corning Fiberglas Corporation. The new board, providing a permanent form for decks of schools, commercial and industrial buildings, serves as an attractive interior ceiling and as thermal and acoustical insulation. Light in weight, it is easy to install by standard methods and is strong enough to carry wet gypsum. The porous board has a noise reduction co-efficient of 75%. It is a barrier to heat and its use greatly increases the insulating value of the deck, resulting in savings on fuel. Will not rot or decay.

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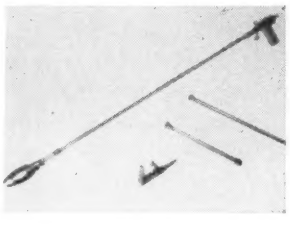
REMOTE HANDLING TONGS — *Item 8*



THE ATOMIC CENTER for Instruments & Equipment, Inc. presents the Atomlab Radiarm, Sr., Remote Handling Tongs, a positive pressure "squeeze-to-release" device for safe handling of radioactive materials. The Radiarm, Sr. features three interchangeable shafts (22", 28", 46") and two interchangeable jaws. Made of heavy aluminum. Easily decontaminated. Double "scissor" jaw is particularly adapted for handling small and large vessels. The "monkey wrench" jaw will grip heavier objects with equal facility.

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NEW VIBRATING CONVEYOR — *Item 9*

A new and smaller vibrating conveyor featuring greater simplicity, reduced power requirements and improved efficiency has been developed by Hewitt-Robins, Inc.

The unit, mounted on springs, is designed to convey at a speed of 38 feet per minute such diversified materials as grain, bundled newspapers, metal scrap, chemicals, coal, sand and gravel, wood chips, beans and flue dust. Simplicity of design allows the new model to be set up or moved in less than an hour. The single-drive, one-horse-power model is available in lengths from 20 ft. to 100 ft., and transfer sections can be used to couple two or more units.

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CONCRETE FORM HARDWARE — *Item 10*

New, simplified, interlocking hardware by Simplex Forms System, Inc. is said to save on concrete form costs. Heart of the system is newly designed, patented, interlocking hardware which is mounted to 2' x 8' or 4' x 8' forms. Everything is mounted to the forms except the line-up brackets. As shown in photo, lever drops over extended head of specially designed tie, locking adjoining forms closely into place.

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HARRY E. HUMPHREYS, Jr.
President,
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